

THE MOSAICS OF HAGIA SOPHIA AT ISTANBUL

THE PORTRAIT OF THE EMPEROR ALEXANDER

A Report on Work Done by
the Byzantine Institute in 1959 and 1960

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The publication of this report is in continuation of the series of Preliminary Reports on the Mosaics of Hagia Sophia which were published, in the form of separate fascicles, at the Oxford University Press for the Byzantine Institute. The previous reports, all by Thomas Whittemore, were entitled *The Mosaics of the Narthex* (1933), *The Mosaics of the Southern Vestibule* (1936), *The Imperial Portraits of the South Gallery* (1942), and *The Deesis Panel of the South Gallery* (1952).

On behalf of the Byzantine Institute, the authors wish to thank the Ministry of National Education of the Turkish Republic and the personnel of its museum and monuments services who have most graciously facilitated the work of uncovering and preserving the mosaics which are published in this report. We are particularly grateful to Bay Feridun Dirimtekin, Director of Ayasofya Museum, for his many courtesies and helpful advice in the conduct of our work. We also wish to express our gratitude to Mr. Robert Van Nice who so generously supplied information which led to the discovery of the portrait of the Emperor Alexander. Finally, we are indebted to Dr. Cyril Mango and to Professor Romilly J. H. Jenkins for their assistance in epigraphical and historical matters.

INTRODUCTION

IN the "Notes on the Work of the Byzantine Institute in Istanbul: 1957 to 1959," a first brief statement was made regarding the discovery of the portrait of the Emperor Alexander (912-913) in the north gallery of Hagia Sophia.¹ When that report was prepared only the upper parts of the figure had been uncovered and, although it was not then possible to describe the entire panel, the inscriptions and the imperial attributes were discussed. The work of cleaning having now been completed, this report will present the entire panel in detail, in its final state, and will also describe the ornamental mosaics in the surrounding areas and attempt to establish their chronological relation to the portrait panel itself.

The cleaning of the surrounding areas reveals that the portrait of the Emperor was not executed as a separate and individual piece of mosaic; it formed a part of a more extensive campaign of decoration in the north gallery and even, perhaps, in other parts of the building. The full extent of that campaign, which must be dated in the mature years of Alexander, cannot yet be determined. Our cleaning and investigations in the surrounding areas have also revealed two phases of mosaic decoration which should be associated with the early history of the building. It is proposed, in this report, to describe the portrait in detail and then to discuss the ornamental decorations in the surrounding areas.

The mosaic figure of Alexander was among those sketched by Giuseppe Fossati in 1849 (figs. 20 and 21) at the time of the general renovation of Hagia Sophia when the surviving mosaics were covered over. One of the two sketches (fig. 21) was known to Thomas Whittemore through a photograph and was published by him in the Third Report.² After vainly searching the galleries for it, Whittemore concluded³ that the portrait panel had perished in the earthquake of 1894. It was not until August of 1958 that its position in the galleries became known, when Mr. Robert Van Nice, while looking through the collection of Fossati drawings that are in the Archivio Cantonale, Bellinzona, Switzerland, observed that the very faint pencil annotations in the wide margins of the water color sketch (fig. 21) gave precise information as to its location. The note in the upper right corner reads: "Imperatore Greco scoperto il 15 Febraio 1849 sopra galleria superiore di S. Sophia al nord dietro le collonne della galleria supr. Probabilmente Allessandro fratello di Leone che regnarano insieme." Half way down the right margin is a plan sketch of part of the north gallery with a cross marking the position.⁴

¹ P. A. Underwood in *Dumbarton Oaks Papers*, 14 (Washington, 1960), pp. 213-215, and fig. 14.

² *The Mosaics of Hagia Sophia at Istanbul*, Third Preliminary Report, The Imperial Portraits of the South Gallery (Oxford, 1942), pl. 37.

³ *Ibid.*, p. 8.

⁴ For a discussion of the sketches and a comparison with the mosaics, see the forthcoming publication

The accompanying diagrammatic plan and section of part of the north gallery (text figs. A and B) and a general view of the area (figs. 2, 3) taken before the work of cleaning had begun will show the position of the mosaic panel. It was found on the eastern face of the great northwestern pier in the tall narrow tympanum that forms the western termination of the continuous barrel vault extending, immediately behind the great arcade of the north gallery (fig. 22), between the two northern piers. The bottom of the panel, including an ornamental border at its base (fig. 4) rests upon the moulded plaster string-course, representing large vine leaves, that now runs continuously throughout the gallery to mark the spring line of the vaults⁵ and separate the revetments from the mosaics. The top of the portrait panel does not reach the soffit of the barrel vault above, but was terminated at a horizontal line 3.10 m. above the vine leaf string-course. Above this level all mosaic on the vertical surface of the pier is lost with the exception of a few large, irregularly shaped tesserae, at the upper left edge of the panel and again to the left of the upper right hand disc (fig. 5), of blue-black local rock similar to those that form the background of the mosaics in the upper reaches of the barrel vault. One can conjecture, therefore, that above the portrait the treatment of the tympanum had consisted of materials and possibly of patterns similar to those which decorate the barrel vault (see *infra*). In any case, the Fossati workmen had covered that area of loss with plaster which was then painted in an all-over pattern like that in the barrel vault (see figs. 2 and 18).

Prior to our work, all surfaces of the Alexander panel and of the surrounding vaults were found to have been completely obscured with paint, undoubtedly the work of the Fossati brothers between 1847 and 1849. The face of the Emperor had first been covered with a thin coating of plaster and the entire surface painted over, in oil paint, in an all-over pattern that imitated that of the mosaics in the barrel vault above and on each side. The mosaics of the barrel vault, although intact, had also been painted in a similar manner, but there the painting roughly followed the design of the mosaic pattern. It is evident that the Fossati workmen in these and many other areas approached the problem of making the interior of the building presentable, in the spirit of decorators, and had crudely smeared plaster over areas where the tesserae were loose and into areas of loss. Where the original motifs of the mosaic decoration were acceptable for the mosque, they were usually painted in a manner that roughly corresponded to the mosaic patterns beneath, but in some places the simplified scheme of decoration introduced by the Fossatis in the newly replastered domical vaults of the galleries was followed and the original motifs completely ignored.

of Cyril Mango on the lost mosaics of Hagia Sophia. The authors wish to acknowledge their debt to Mr. Robert Van Nice for communicating his discovery to us in Istanbul and to Dr. F. Bonetti, Director of the Archivio Cantonale, Bellinzona, and to Dr. Cyril Mango for permitting us to reproduce the two Fossati sketches.

⁵ The top of the string-course is 5.64 m. above the level of the gallery floor.

The areas cleaned by the Byzantine Institute, at present writing, are the following (fig. 11): the whole of the Alexander panel; the barrel vault above it and at each side to a distance, toward the east, of about 1.80 m. from the portrait panel; the soffit of the large arch that carries the northern side of the barrel vault, cleaned to a height of about 3.50 m. above the vine leaf string-course (to the right in figs. 4, 11, 15); the entire soffit of the westernmost arch of the gallery arcade, to the south of the portrait panel, which has a span of about 2.20 m. (left in fig. 11); and a fragment of mosaic on the western impost of the arch of the arcade between the mosaic of its soffit, above, and the marble revetments of the pier respond, below (lower left area of mosaic in figs. 11, 12). For convenience in distinguishing these five areas, we will speak of them as: 1. the Alexander panel; 2. the barrel vault; 3. the soffit of the northern arch; 4. the soffit of the southern arch; and 5. the impost of the southern arch.

THE ALEXANDER PANEL⁶ (Figures 1, 4-10)

In contrast to the other imperial portraits in Hagia Sophia in which emperor and empress are depicted at each side of Christ or the Virgin, the Emperor Alexander stands alone within the narrow confines of the panel, a fact which accounts for the complete frontality of the figure. He is attired in ceremonial vestments and bears attributes in his hands that correspond rather closely to the trappings with which, according to the Book of Ceremonies,⁷ the emperors of the tenth century were equipped when they went in procession on Easter Sunday to Hagia Sophia for the services. It is said that on this occasion the emperors wore the *sagion*, a kind of tunic, which was bordered with golden embroideries, and the dark red *skaramangion*,⁸ which seems to have been put on over the *sagion*, for the *tzizakion*, which they wore up to that moment, was removed when the *skaramangion* was put on. The *loros*, a long and richly ornamented scarf, which was wound about the body, was then put on and either a white or a red crown, according to their preference, was placed on their head. Finally, a golden scepter⁹ adorned with gems and pearls was placed in their left hand and the *akakia*, or *anexikakia*, in their right.

In the mosaic all these elements of the costume with the exception of the scepter appear to be represented; instead of the scepter, Alexander holds the orb in his extended left hand, but in his right, as specified, he holds the *akakia*.¹⁰

⁶ Dimensions: width of background, 1.50 m.; height, from top of mosaic border, below, to top of background, 2.57 m.; height, from top of plaster string-course to top of background, 3.10 m.; height of figure, from toe of his right foot to top of nimbus, 2.37 m.; diameter of nimbus, .44 m.; diameter of orb, .25 m. Diameter of inscribed discs: upper left, .425 m.; lower left, .405 m.; upper right, .35 m.; lower right, .38 m.

⁷ *De Cerim.*, I, 37 (Bonn ed.), p. 187, where the various garments and attributes of the emperors are specified for each of the important feasts, and again in I, 1, p. 25.

⁸ For N. P. Kondakov's views on this garment and its origins, see his article, "Les costumes orientaux a la cour byzantine," *Byzantion*, I (1924), pp. 7-49. Studies on the imperial Byzantine costumes, however, are very inconclusive since little has been done to relate the terminology used in such texts as *De Cerimoniis* with existing portraits and representations of emperors in Byzantine art.

⁹ *De Cerim.*, I, 1 (Bonn ed.), p. 25 specifies a golden cross instead.

¹⁰ For a discussion of the *akakia*, its form and symbolism, see the previous report on this mosaic referred to *supra* in note 1.

The undergarment (*sagion* ?) is visible only at the cuffs and hem which are, as the text described, richly embroidered and decorated with pearls. Over this is a loose-sleeved garment¹¹ (*skaramangion* ?) of purple (dark red, according to the text) which is visible in the right sleeve and at the sides, from the knees downward; it is otherwise covered by the *loros* which is heavily decorated with gems and pearls. On his head he wears a red crown which is adorned with pearls and a golden circlet studded with gems. From the crown are suspended the *perpendulia* of pearls. On his feet he wears the imperial red boots, also decorated with pearls.

In the upper part of the panel, flanking the figure of the Emperor, are four inscribed discs, two on each side. The disc at the upper right presents the name of the Emperor in three lines: ΑΛΕ | ΞΑΝ | ΔΡΟC. The other three contain cruciform monograms which form a complete sentence¹² when read in the following sequence: upper left, Κύριε βο(ή)θει (τῷ σῷ) δού(λ)ῳ; lower left, ὀρθοδόξῳ; lower right, πιστῷ δεσπ(ό)τῃ.¹³

The only other extant portrait of Alexander, if we exclude the coins on which he appears, is in one of the miniatures of the manuscript of the *Homilies of Gregory of Nazianzus* in Paris (Bibl. Nat., gr. 510, fol. B) which depicts the Empress Eudocia Ingerina standing between the youthful figures of Leo VI on her right and Alexander, at about the age of ten, on her left.¹⁴ Another miniature of the same manuscript represents Basil I between the Prophet Elijah and the Archangel Gabriel (fol. C^v). These portraits of the family of Basil I, though somewhat earlier, have very marked similarity to the mosaic in matters of costume and imperial attributes. Also as in the mosaic, the term δεσπότης is used whenever imperial titles are given.¹⁵ The crowns are of the same type (low and tightly fitting, to conform to the shape of the head) with similar narrow circlets and similar *perpendulia*.¹⁶ Both Leo and Alexander hold the orb in their left hands and Leo, at least, also holds the *akakia* in his right hand.¹⁷ The

¹¹ Insofar as it is visible it is unadorned, but beneath the parts covered by the *loros* it may have been richly embroidered.

¹² From the same general period is a series of seven monograms, published by A. M. Schneider (Mauern und Tore am Goldenen Horn zu Konstantinopel, *Nachrichten der Akademie der Wissenschaften in Göttingen*, Phil.-Hist. Klasse [1950], p. 98 and fig. 3), which together form a prayer for Leo and other members of his family, including Alexander.

¹³ "Lord help thy servant, the orthodox faithful Emperor." It is curious that the name of the Emperor should stand outside the grammatical construction of the prayer expressed by the three monograms; to include the name, the dative case would be required.

¹⁴ Omont, *Miniatures des plus anciens manuscrits grecs de la Bibliothèque Nationale* (Paris, 1929), pl. xvi. Since Constantine, the eldest and favorite son of Basil I, is not portrayed, it can be presumed that the manuscript dates after his death (3 Sept. 879) but before 885, by which time Eudocia Ingerina had died (V. Grumel, "Chronologie des événements du règne de Léon VI," *Echos d'Orient*, 35 [1936], p. 28). The miniature was probably painted ca. 880-881.

¹⁵ Only Basil and Leo are so inscribed; Alexander, as it seems, was not (Omont, *op. cit.*, p. 12), although he was probably co-Emperor at the time.

¹⁶ This type of crown also appears on the head of the kneeling emperor of the Macedonian Dynasty in the lunette over the imperial doors of the narthex of Hagia Sophia (Whittemore, *op. cit.*, First Report, pl. 21) identified by some authors as Leo VI and by others as Basil I.

¹⁷ This detail, to our knowledge, has not been observed previously. Although the paint immediately above Leo's right hand is badly flaked, the *akakia* can be seen to project below the hand; near the bottom its rounded end is decorated by two short horizontal rows of pearls. It is possible that Alexander and Basil also held this attribute, but the paint in the areas of their right hands is flaked.

only major difference between the vestments of the miniature portraits and the mosaic is in the *loros*. In the former the *loros* is always narrower, with three instead of four parallel rows of ornaments. There is, however, the same excessive use of pearls; the shoulders are outlined in pearls and from the edges of the *loros* pearl fringes are arranged in the same manner.

THE DATE OF THE ALEXANDER PORTRAIT¹⁸

Alexander, the third son of Basil I, was born in A.D. 870 or 871. He was crowned as co-Emperor, at about the age of nine, before November of 879 and probably before August of that year,¹⁹ thus sharing the throne with his father and his elder brother Leo VI. He remained co-Emperor during Leo's life²⁰ despite the hostility that existed between the brothers, and after Leo's death he ruled as sole Emperor for a period of thirteen months, from 11 May 912 until his death on 6 June 913, at which time, therefore, he must have been about forty-two or forty-three years of age.

The mosaic portrait shows Alexander as a man of mature years and must, therefore, be ascribed to the late years of his life. It seems most probable, however, that it represents him in his capacity as sole Emperor and should be dated in the brief period of his reign. We incline to this conclusion by analogy to the other imperial panels in Hagia Sophia²¹ in which Constantine IX Monomachus, John II Comnenus, and his son and co-Emperor Alexius were depicted after their coronations. If this analogy applies also to the Alexander portrait, it would have been executed, in all probability, in 912.

It might be objected that in the portrait Alexander is called by the title of *despot* rather than *basileus*, the title used in the inscriptions of the later emperors portrayed in Hagia Sophia, and that he was, therefore, not the ruling emperor. The latter title, however, was conferred upon a co-emperor²² as well as upon a senior emperor just as the term *despot*, as we have seen, was used for both.²³

¹⁸ Since this mosaic is ascribed to Phase 3, the conclusions regarding its date will apply also to those ornamental mosaics which were executed with it in the same phase (see *infra*).

¹⁹ C. Mango, *The Homilies of Photius Patriarch of Constantinople*, Dumbarton Oaks Studies, III (Cambridge, Mass., 1958), p. 179. Alexander's coronation as co-Emperor is usually associated with the death of Constantine, his eldest brother, which most probably occurred on September 3, 879.

²⁰ According to G. Ostrogorsky (*History of the Byzantine State* [New Brunswick, 1957], p. 215, note 1), there is no evidence that Leo VI temporarily deprived Alexander of his office of co-Emperor as suggested by Lambros (*BZ*, 4 [1895]), p. 92, Runciman (*Romanus Lecapenus*, p. 45), R. Demangel and E. Mamboury (*Le Quartier des Manges* [Paris, 1939], p. 72), followed by A. M. Schneider (*op. cit.*, p. 98).

²¹ See Whittemore, *op. cit.*, Third Report, pl. III ff., and pl. xx ff.

²² Both John II and his son and co-Emperor Alexius are called *basileus* in their panel in Hagia Sophia (*ibid.* pp. 24 and 27).

²³ See *supra*, p. 192, where it was pointed out that both Basil and Leo are called *despot* in the miniatures in Paris gr. 510. See also the monograms on the walls overlooking the Golden Horn near Aya Kapi (*supra*, note 12), or the inscription on a tower in the quarter of the Mangana (R. Demangel and E. Mamboury, "Une inscription datée sur une tour byzantine de Constantinople," *Bulletin de correspondance hellénique*, 60 [1936], p. 211) which refers to Leo VI (then senior Emperor) and Alexander (co-Emperor) with the same title of *despot*.

COLOR DESCRIPTION

The Background (figures 4, 5)

The lower part of the background, which forms a ground zone in which the figure stands, is composed of three horizontal bands²⁴ of green glass, each of a different value and character, the darkest at the top and the lightest at the bottom. The uppermost band consists primarily of emerald green tesserae, the middle band of pea green, and the lower one mainly of yellow-greens.

Above the ground zone, the background is laid in horizontal rows of gold and silver tesserae which are set normal to the plane of the panel;²⁵ the rows are far from straight and are rather widely separated.²⁶ The proportion of silver to gold is about 2 to 5, or about 30 per cent silver.²⁷ Only in the ground of the nimbus and a few other areas is gold used without an admixture of silver. The plaster setting bed in which the metallic cubes are laid had been painted yellow ochre before the tesserae were inserted.

The Face (figures 6, 7)

The areas of flesh in the face and neck are set in three colors of the usual (Tunisian?) marble: white, warm off-white, and pink. Pale green glasses are used for the shading of the face and neck. Across the brow, the edge of the lining or padding of the crown is indicated by short diagonal strokes of pale yellow-green glass alternating with black-violet glass and the purple cartoon paint on small patches of unset plaster. The shadow is then drawn by the black-violet line that forms part of the outlining of the face (see the color plate, fig. 1).

The eyebrows are drawn in black and violet glass tesserae and the shadow lines beneath are of pale green-umber glass. The upper eyelids are in off-white marble, the eyelashes and pupils in black. The whites of the eyes are of white marble at the left sides of the eyeballs²⁸ and of bluish gray Proconnesian marble at the right. The irises were left unset in the cartoon paint of light brown. The

²⁴ Total height, .53 m.

²⁵ In most, if not all, of the metallic backgrounds of the sixth-century mosaics that occur on the vertical walls of Hagia Sophia the tesserae were slightly tilted to face downward. This is the case in the lunettes of the east wall of the narthex (Whittemore, First Report, p. 12); in the west tympanum of the western bay of the south aisle (P. A. Underwood, "Notes on the Work of the Byzantine Institute," *Dumbarton Oaks Papers*, 14 [1960], p. 209). This is also true of some other early mosaics in the church which may or may not be of the sixth century, and it can be seen also in the mosaics of the Monastery of St. Catharine, Mt. Sinai. In the ninth- and tenth-century work in Hagia Sophia it appears to have been practiced less consistently. The tesserae are tilted in the lunette over the imperial door in the narthex, in the background of the inscription on the face of the conch of the apse, and in the background and the haloes of the vestibule mosaic. Mosaics of this period in which the backgrounds are laid flush are: the Alexander panel, the panels of the Church Fathers of the north tympanum, and the lunette of the Deesis in the room off the south end of the west gallery. Tilted metallic tesserae occur here and there in the ornamental mosaics to be described below.

²⁶ From 2 mm. to 3 mm. apart. The tesserae are about 6 mm. square.

²⁷ An unusually high percentage. Perhaps this is attributable to the inappropriate position of the panel which is always rather obscured by shadows; the silver serves to brighten the entire mosaic.

²⁸ Unless specified as *his* right hand, or *his* left foot, etc., the following description will indicate the right or the left from the point of view of the beholder.

lower eyelids are in pale violet glass and the shadow lines below in pale yellow-green glass.

The ridge and tip of the nose are white marble with a line of off-white marble at the left side. At the right side of the nose are three lines: the inner line, beside the ridge, in pink marble; the middle line, which continues the line of the eyebrow, in pale violet glass; and the outer line in light green glass. The shading of the nose at the left, is done in two lines of yellow-green and one of light green glass adjoining the ridge. The tip of the nose is highlighted by a large polygonal stone of white.²⁹ The shadows beneath the nostrils are violet glass and a rather large square violet tessera marks the shadow below the point of the nose above the lips. The surrounding shadows are in pale green and yellow-green glasses.

Each of the lips is drawn by a single row of pink marble with the shadow between them in pale violet glass.

The beard is of violet and black glasses lighted with yellow-green glass. Here and there the unset cartoon paint of purple and green is to be seen.

The Nimbus

The nimbus is outlined with two rows of emerald green glass tesserae; the field is of gold tesserae set in concentric circles except for the two innermost rows which follow the contour of the crown. This manner of setting and the fact that no silver tesserae are used serve to differentiate the nimbus from its surroundings and give it a warm brownish tone that is markedly different from the paler color of the background.

The Right Hand and the Akakia (figure 8)

The right hand, which clasps the *akakia*, is outlined with a row of red glass and filled with marbles: pink on the lower sides of the fingers and back of the hand, and off-white on the upper sides. The tip of the thumb protruding from behind the right side of the *akakia*, above the clenched fingers, was set with only a single tessera which is of silver and is laid in reverse. The outline of the tip of the thumb is the cartoon drawing in purple paint.

The *akakia*, which was probably a small pouch of silk filled with dust and wrapped in a purple kerchief, is represented as being cylindrical in form, with rounded ends.³⁰ It is outlined in violet-black glass, its rounded top and bottom

²⁹ This stone is quite prominent because of both its size and its lightness of hue. Though polygonal, its general shape is that of an oval brought to a sharp point at the top. It is interesting to observe that similar stones appear, though not quite so prominently, at the tips of the noses of the following figures in Hagia Sophia: the three Church Fathers (Ignatius the Younger, John Chrysostom, and Ignatius Theophorus) in the north tympanum; and the Emperors Constantine and Justinian in the vestibule panel (T. Whittemore, *The Mosaics of Hagia Sophia*, Second Preliminary Report [Paris, 1936], pls. XII and XIII). Still more closely comparable are the stones at the tips of the noses of the Virgin, the Christ Child, and three of the four archangels in the mosaics of the Church of the Koimesis at Nicaea (Th. Schmit, *Die Koimesis-Kirche von Nikaia* [Berlin and Leipzig, 1927], pls. XXI, XXII, XVI, XVIII, XIX).

³⁰ See the remarks of A. Vogt concerning the nature of the *akakia* in his edition of Constantine VII Porphyrogenitus, *Le livre des cérémonies* (Paris, 1935), commentaire, p. 71 f. Also cf. P. A. Underwood, *op. cit.*, p. 214 for further bibliographical references and comments on the symbolism of this attribute.

are of gold tesserae, and the kerchief is represented in red glass. Two horizontal rows of violet-black glass, separated by a row of red glass, border the edges of the kerchief.

The Left Hand and the Orb (figure 9)

The left hand, held out to one side, balances the orb. The outline of the orb is a single row of the same dark blue glass that is used to fill the field of the lower half; the upper half is filled with emerald green glass. The division between the two halves is not a straight line but a double curve that dips downward in the center.

Only the four fingers and the back of the hand that were exposed to view in front of the orb are set in mosaic tesserae. The thumb and palm of the hand, as though seen through the orb, which is indicated, therefore, as being transparent, are left in the unset plaster of the setting bed, painted here in terre verte and purple which are blended in places. Six red glass tesserae indicate the left edge of the little finger; two widely spaced red glass tesserae are set at the right edge of the index finger; and three are placed along the under side of the thumb. Six tesserae of pink marble continue the line below the thumb and another six describe the ball of the thumb against the palm. The under side of the hand and fingers are sparsely set with pink and white marble. Otherwise the outline of the hand is left mostly in the purple cartoon paint and the thumb and ball of the thumb are in terre verte.

The Imperial Vestments (figures 1, 5, 6)

The crown is basically red but is heavily encrusted with pearls and a golden circlet studded with jewels. It is divided horizontally into three zones. At the top and bottom are two rows of tesserae of alternating red glass and the dense mat-white rock with which pearls are represented. Between these two zones is a circlet of gold in which five square jewels are set. That at the center is of red glass shadowed by the pale amber of gold tesserae which have been set on one side or in reverse. The others are of emerald green glass shadowed by dark blue. A row of black-violet glass tesserae defines the top of the crown on which stands a cross of emerald green glass tesserae with a pearl at the center and three at the base. The *perpendulia*, which are attached to each side of the crown, fall in straight lines down each side of the face to the shoulders. Each is composed of two strands of alternate red glass and mat-white representing pearls. The outermost strand on each side appears to be attached to the upper band of pearls set in the crown, while the innermost attach to the lower band.

The long undergarment (*sagion*?), visible only at the richly decorated cuffs and hem, was worn beneath an outer garment, and like the outer garment, it appears to have been of purple, as is indicated by the background on which the embroidered and encrusted ornaments are worked. The purple is rendered in

tesserae that are chips of a light purple local stone.³¹ At the hem, the undergarment is decorated with two vertical bands of gold, above the feet, in which four rectangular jewels, rendered in green and red glass, are set. The bands are bordered at the sides by double rows of pearls and below by a single row. The jeweled band at the right has lost the tesserae with which it was set. Between the two bands, and again at the far right, are three vertical double rows of pale greens and ambers, in indication of folds, which are in reality metallic cubes set on one side or in reverse. The cuff of the garment's right sleeve is of gold with two rectangular jewels, one of green glass and the other of large red tesserae of terracotta. Along the very end of the cuff, next to the hand, is a single row of pearls. The tesserae of the left cuff, at the far right, have fallen, except for a border of pearls at the wrist similar to that of the right cuff. In all probability the two cuffs were originally alike.

The outer garment (*skaramangion*?), covered in very large part by the *loros*, is visible in the wide sleeve, at the left, and over the lower legs at both sides of the lower end of the *loros* which is suspended down the center of the figure. In these areas it is not decorated and is indicated as a purple garment by the use of the same pale purple local stone, mentioned above, that was the basic material of the undergarment. The outline drawing and the folds of the outer garment are indicated by single, double, or triple rows of metallic tesserae set in reverse or on one side to produce a brown amber color. In a small V-shaped area at the neck, the garment was bordered at the neck line by a row of alternating pearls and red glass tesserae, like the strands of the *perpendulia*; this is separated by a single row of gold from another row of pearls which alternate with metallic cubes set on one side or in reverse. This border has suffered losses.

Wrapped about the body of the Emperor is the unusually broad and heavy *loros*. This long scarf, with one end hanging at the same level as the bottom of the outer garment, extends vertically up the front of the figure and seems to have been passed over the right shoulder whence it presumably continues down the back of that shoulder to emerge under the right arm and then pass upward over the left shoulder. It then seems to have been drawn diagonally across the back and brought forward around the right hip to fall diagonally across the front where it is folded to reveal the back, or lining, of the scarf as it is draped upward over the extended right arm. Finally, the end of the *loros* falls over the left wrist and hangs in a vertical fold with its ornamented face exposed to view. The edges of the *loros* are bordered, and the field divided into squares, by double rows of pearls. The rows of pearls, as also the individual pearls in each row, are separated by metallic tesserae set in reverse or on one side. The tesserae of these borders are rather widely spaced, and it can be seen that the setting bed is painted a light purple color. Within each of the squares into which it is thus divided is a large square jewel surrounded by one, two, or three rows of metallic tesserae;

³¹ This material was used for the heavy shadows in the white vestments of many of the figures in the mosaics in the room off the southern end of the west gallery at Hagia Sophia (late ninth century?), and appears again in the vestments of the archangel in the arch of the bema.

in the upper parts of the figure these are entirely of gold, but in the lower part a few silver tesserae are here and there inserted. The jewels are alternately red and green glass outlined by a single row of blue glass, with the exception of the vertical row of three jewels at the far left under the sleeve and the jewel under the cuff at the left, which are composed of terracotta. These exceptions are, however, also outlined with blue glass. The jewels in the *loros* are so arranged that the red and green colors alternate in both the longitudinal and transverse directions on the scarf. Along each side of the *loros* is a kind of fringe consisting of widely separated sprays of three pearls that are attached at intervals to the edges. Some of these, along the lower, vertical, part of the *loros*, have large pear shaped pearls, of from nine to eleven tesserae, which are placed at the centers of the sprays.

The boots (fig. 10) are outlined by one, two, and in some places three, rows of red glass with a few interspersed tesserae of amber or green color which are metallic cubes set in reverse or on one side. The lighter areas of the boots are of terracotta. Intermingled with these materials, as decoration, are a number of round mat-white stones representing pearls.

*The Inscribed Discs*³² (figure 5)

The backgrounds of the four inscribed discs which flank the upper parts of the figure are set in dark blue glass; in the inscribed disc at the lower right the rows are horizontal, in the others, concentric. The inscriptions are made of the same dense mat-white rock with which pearls are indicated. The individual letters are fairly consistently outlined by single rows of the dark blue of the background.

TECHNICAL DETAILS

As margins at the two sides of the panel, the setting bed was left exposed in two narrow strips averaging about 5 cm. in width. While much of this plaster along the left side of the panel was lost and had to be replaced, that along the right side was in great part preserved and is a dark gray.

In conformity with almost invariable practice, the contours of all parts of the figure were bordered with one or, more usually, two rows of the materials with which the surrounding background was to be set.³³ Throughout most of the contours that were to be relieved against the gold and silver background, it is

³² See note 6 for dimensions, and p. 192 for the decipherment of the monograms.

³³ This applies to those mosaics in which the tesserae of the background are set with their faces in the same plane as the surface of the figures, and where the background does not employ an allover pattern, such as the scale pattern. If the tesserae of the background are tilted at an angle to face downward (e.g. Hagia Sophia, Constantinople, narthex lunette; Mt. Sinai, Moses panels on the face of the wall above the apse), or are laid in a pattern (e.g. Hagia Sophia, Deesis panel of south gallery), the rows of the background surrounding the contours of the figures may be omitted and the tilted cubes, or the patterns, may be brought directly to the edges of the figures. There are instances, however, in which contours of figures are bordered by parallel rows of background materials even though the background forms a pattern (Kariye Camii, donor panel; apse mosaic at Livadhia in Cyprus), or is laid in rows of tilted cubes (Hagia Sophia, vestibule lunette).

evident that the rows of the metallic tesserae that follow the contours were set along with the figure itself, before the plaster setting bed for the metallic background had been applied. This is most clearly evident along the left edge of the figure from the top of the green ground zone to the projecting sleeve of the figure. In the area of lost background tesserae at the level of the knee on this side, and again at the hip, the line of juncture between the two applications of plaster setting bed is clearly visible, and in some other places where the mosaic is intact the juncture of the two has opened up slightly and can be traced on close examination. In the contours that occur in the green zone at the bottom of the panel, however, slightly open joints occur here and there between the very edge of the figure itself and the surrounding row, or rows, of green glass which parallel the contours, thus indicating that none of the background material was set here along with the figure. This is clearly observable along the right side of the hem of the garment and the right side of the foot at the right. These phenomena indicate the limits of various stages of the work in the construction of the mosaic.

THE ORNAMENTAL MOSAICS SURROUNDING THE PORTRAIT PANEL

The removal of the Fossati paint from the ornamental mosaics and the portrait revealed three distinct phases in the history of the mosaics in the areas under discussion. These areas are comprehensively illustrated in figure 11. Phase 1 appears in the lower left corner as an impost below the arch of the arcade; Phase 2 consists of the mosaics in the soffit of the arch above the fragment of Phase 1. All other mosaics in the area, including the portrait, pertain to Phase 3 (see also text fig. B).

Phase 1 (figure 12, lower left)

The earliest piece of mosaic is the irregularly shaped fragment³⁴ that appears on the face of the pier respond immediately above the marble revetments and below the spring line of the westernmost arch of the gallery arcade. Part of its original lower limits are still preserved and it can be seen that the setting bed curves forward at the bottom to rest upon the upper edge of the marble slab where, in some places, it still retains its undisturbed contact with the marble. The present upper limit of the fragment is marked by an irregular line, where it was obviously broken off, at the juncture with the later mosaic in the soffit of the arch above it. The mosaic of this phase is broken away around the metal tie rod and does not come in contact with it. The original southern limit (left) of the fragment was the edge of the marble slab that serves as a facing for the pier overlooking the nave (far left edge of fig. 12). Along this edge the mosaic is broken away in a jagged line at a short distance from the back face of the slab.

³⁴ Greatest width, 1.60 m.; greatest height, 1.10 m.

The space between the mosaic and the slab was filled with plaster. Along this left side of the mosaic its surface curves forward and originally met the very edge of the marble slab, thus indicating that the mosaic had been laid after (perhaps just after) the marble had originally been set in place. The fact that the mosaic is broken along this side and no longer makes contact with the marble indicates, however, that the slab was removed and subsequently replaced at some time after the mosaic had been laid. On the opposite side (right), the fragment is broken off along an irregular line. Here the mosaic decorations of Phase 3 were brought up to it as they were wrapped around the corner of the pier respond and even encroached upon the lower right corner of the fragment of Phase 1 to fill an area that had been destroyed.

The fragment is sufficiently well preserved to show that it consisted of a rectangular panel containing a continuous series of rinceau scrolls which was framed at the bottom and the two sides by ornamental borders. It is obvious that originally the mosaic of Phase 1 was not confined to the impost of the arch but continued upward in an unbroken series of rinceau scrolls to fill the soffit of the arch. The proof of this lies in the following facts: the second scroll, a small part of which survives, was broken off at the spring line of the arch; the two borders at the sides were also broken off by the horizontal lower border of the soffit mosaic of Phase 2; the border at the right is curved toward the left to adjust to the narrower width of the soffit above, where the border, if continued upward along its curve, would become the bull's-nose border around the edge of the soffit. Thus, only the lower part of the earlier soffit mosaic of the arch, on the face of the pier respond, was left *in situ* while the upper part, in the arch itself, was destroyed and replaced by the extant mosaic of Phase 2.

The lower edge of the fragment of Phase 1 is about 1 m. below the metal tie rod that extends horizontally from the pier respond, at the spring line of the arch, to the top of the capital on which the arch rests at its eastern end. In Phase 1, therefore, the decoration of the soffit of this westernmost arch of the arcade had been unsymmetrical, for its lower, western extremity against the pier must have been 1 m. lower than its eastern extremity at the top of the capital. This was due to the fact that the spring lines of the arches of the arcade were about 1 m. higher than the spring lines of the arches and vaults of the gallery, a level which is marked by a continuous plaster string-course separating the marble revetments from the mosaic.³⁵ In Phase 1, then, the mosaicists chose to extend the soffit decoration of the arch downward to the common lower level of the gallery mosaics, but this was done, of course, only at the ends of the arcades where some adjustment had to be made between the two different levels. Fragments of Phase 1 mosaic, closely comparable to the fragment described here, still exist at the other three points where the two lateral arcades of the galleries terminate against the four piers. In Phase 2 the mosaicists chose to leave the fragments of Phase 1 at these four points and to decorate the soffits of the terminal arches symmetrically.

³⁵ The existing string-course is modern but it is very probable that a similar string course had previously existed at about the same level.

The panel with the rinceau motif that formed the main element of the soffit decoration of Phase 1, was bordered on the nave side (left), and at the bottom, by a border about 30 cm. wide. This border has a background, laid in straight horizontal rows, of very dark violet—almost black—glass in which a motif in the shape of an eight-pointed star, based on overlapping squares (*ca.* 18 cm. on a side), is set at intervals of about 36 to 38 cm. The stars are gold laid in horizontal rows, and within each is a quatrefoil of yellowish green glass cubes also laid in horizontal rows. Midway between the stars, in the center of the border, are small squares of gold, three cubes to a side. These small squares are flanked, at the edges of the border, by pairs of trefoils which point inward toward the squares. The trefoils are formed by two rows of silver tesserae and are filled by dull, almost brick-colored tesserae which in reality are gold tesserae set with their bottom sides up.

The border on the north side (right) of this fragment curves inward (toward the left) as it ascends in order to form the bull's-nose border for the edge of the arch above, whose soffit was narrower than the pier respond below. This border was basically the same as that along the south side and the bottom, but eight-sided cusped forms were substituted for the stars. The cusped figures, too, are filled by green quatrefoils but here darker green glasses are used. The silver trefoils are filled with dark red glass instead of the brick red color of the opposite border. The cusped motif alternated with another, of indeterminate form, of which only a small bit remains at the upper end. The fills of the motifs, and the dark violet background, are laid in less regular horizontal rows.

The central panel (.93 m. wide), containing the rinceau, is bordered by a single row of large, light gray Proconnesian marble tesserae. The background of the panel is gold, with no admixture of silver, with the rows laid horizontally in some places, and in others vertically or in curves that are adapted to the curvature of the scrolls of the rinceau. The scrolls are mainly dark blues with some use of lighter blues which surround the greens and yellow-greens with which the pointed leaves are rendered. Two sharply pointed, heart-shaped leaves on long stems, hardly distinguishable in the photographs, hang pendent at the sides of the main stalk of the rinceau in the lower left corner. Another, in the setting bed, occurs in the upper right in the area where most of the tesserae have been lost. One of the two leaves in the lower left is in light blue glass, the other in dark green. Where the setting bed had been laid bare the plaster of the gold background is seen to have been painted red, while the rinceau was painted in a dark, almost black, pigment.

The soffits of the arches of the four exedrae which round out the corners of the nave, and are continuations of the great lateral arcades, still retain much of their mosaic decoration. These mosaics share the same general characteristics of the fragment of Phase 1 in the style of their rinceaux and vine scrolls, in their border motifs, the materials and colors employed, and in the techniques of setting the tesserae, and they are to be considered parts of the mosaic decoration of Phase 1. They differ from the mosaics of Phase 2 in exactly the same respects as does the fragment of Phase 1 described above.

Phase 2 (figures 13 and 14)

The mosaics of Phase 2, in the areas that are described in this report, are found in the soffit of the arch to the south above the fragment of Phase 1. However, the mosaics in the fourteen arches of the two lateral arcades of the galleries (fig. 22) are of the same period and share the same characteristics, although there are variations in the types of foliage and scrolls with which their central panels are decorated. The arch described here, which is typical of all fourteen, has a span of 2.20 m. and a depth of about 1.30 m.

The mosaic decoration consists of a rectangular panel in the center which again uses the motif of the rinceau. The field of the panel, without its narrow frame, measures .84 m. in width. This is surrounded by a flat border at the bottom and on the north side (left) where it abuts the slate backing of the *opus sectile* spandrels that were applied around the face of the arch which overlooks the nave (far left in fig. 13 and far right in fig. 14). On the other edge of the arch (right), looking into the gallery, the surface of the border is rounded to form the bull's-nose that turns onto the inner face of the arch. The lower border at the western springing of the arch, including the inner frame around the central panel, is 30 cm. wide; that of the southern side (left in fig. 13) is 26 cm. wide; and that of the northern side (right) is 20 cm.

While it is evident that the border is inspired by that of Phase 1, there are notable differences in technique and colors, and the workmanship is conspicuously more crude. The background of the border is of dark blue glass (dark violet in Phase 1). The tesserae are no longer laid in neat horizontal rows but attempt to parallel the contours of the various motifs used in the border. The principal motif is again an eight-pointed star, very irregularly shaped, which is bordered around the contour by a single row of red glass. The field of the star motif is gold but with some admixture of silver. At the center of the star is a quatrefoil bordered by one row of dark blue and filled with mixed greens and blues. Between the stars are small rounded spots of gold (squares in the earlier mosaic) and these are flanked by trefoils which differ in character and form from those of the earlier mosaic. These are outlined by two rows of silver, as in Phase 1, but are filled with mixed green or light blue glasses.

The central panel of the rinceau is framed by two rows of red glass (one row of gray marble in Phase 1). The field of the panel is of gold, with about ten per cent silver. The rows are less consistently horizontal or vertical than in the background of Phase 1. The colors in the rinceau are dark blue in the darks and mixed blues and greens in the lights. In general, the mosaicists of Phase 1 were more selective in their use of color, avoiding the use of mixed colors that is so prevalent in the Phase 2 work. The type of the rinceau differs from that of the earlier mosaic fragment below it, but this is not in itself significant since rinceaux of similar form appear in various soffits of the arches of the exedrae, which are of Phase 1.

In figures 13 and 14, it can be seen that the unset plaster of the setting bed along the outer edge of the mosaic, which had been frescoed in earth red, in

some places still tightly abuts the back side of the *opus sectile* facing of the spandrels (fig. 22). This is an indication that the facing was already in position when the mosaic was laid and that it has not been disturbed since. This contrasts with the fragment of Phase 1, where the marble revetment against which it abutted had been removed and replaced. The *opus sectile* facing of the spandrel at the eastern side of the arch (fig. 14), where it rests on the capital of the first column, has a form that does not coincide with the trace of the arch, for here a good deal of the slate backing is exposed. The possible significance of this, with regard to the structural history of the building and its mosaics, will be dealt with below³⁶ in considering the question of dating the various phases. Another detail that should be observed is the fact that the plaster of the setting bed of the mosaics of Phase 2 has perfect contact with the metal tie rod around the upper half of its circumference. It was noted before, on the other hand, that the mosaic of Phase 1 is broken away around the lower part of the tie rod. These facts suggest the possibility that the tie rod, in its present setting, may have been put in place after the Phase 1 mosaic was destroyed and before, or in conjunction with, the laying of the Phase 2 mosaic.³⁷

Phase 3

All other mosaics in the areas under discussion (text fig. B), including the portrait panel, were the work of a single campaign of decoration which appears to have been quite extensive. The evidence in support of this conclusion is twofold. First, all the ornamental mosaics (excluding the earlier phases and, for the moment, the portrait panel) share common characteristics of technique and contain some quite distinctive materials in their various parts. Second, there are no breaks in the continuity of the work such as would indicate a difference in epoch. Those slightly open joints which do appear penetrate through the setting bed only, not through the renderings of plaster beneath. These joints mark the sequence of execution of the various parts within the continuous campaign. That is to say, the joints merely indicate the edges of the individual areas into which the mosaicists subdivided the whole area and to which, individually and in turn, the plaster of the setting bed, and the mosaic on its surface, had been applied. On completion of an individual area the excess plaster was removed along its edges, at the very edge of the mosaic surface, before the plaster of the setting bed had hardened. This was done so as to provide a sloping, or bevelled edge to the setting bed of the completed area. By the time the adjacent area was to be executed the bevelled edge of plaster of the finished area would have hardened somewhat and the new plaster, on being brought up to the edge, would have made a slightly overlapping joint with respect to the already completed mosaic. The plaster of the first area having hardened, the fresh plaster of the second, as it dried, tended to shrink away from the first, thus developing a slight

³⁶ P. 211.

³⁷ The iron tie rod is roughly square in section (4 cm. high and 5 cm. wide). It is bedded in stone with a packing of lead. Close to the surface of the mosaic it appears to be painted red.

fissure between the two at the angle of the bevel, and indicating, thereby, the sequence in which the two adjoining areas were laid. This can be determined by slipping a thin blade into the slightly open joint and observing the angle at which the blade enters. As would be expected, the joints generally coincide with the edges of the various units of the designs which, in turn, are largely dictated by the architectural forms. For example, such joints are found between the field of the soffit of the large arch to the north (fig. 15) which is treated as a continuous unit of design, and the borders along the sides which form the bull's-nose that curves around the edges of the arch; to the left of this border another joint separates the latter from the continuous pattern with which the barrel vault was treated. The joints, thus, give at least partial clues as to the sequence in which the various parts of the areas of Phase 3 were executed.

Characteristic of the work of the third phase, especially in the ornamental parts, is a looseness of technique in which the forms are inaccurately drawn, and in which the tesserae, which often tend to be irregular in shape, are rather widely spaced—a technique that one might expect to find in works that were to cover vast areas with the greatest economy of time and materials. The motifs tend to be large in scale and of relative simplicity. Especially in those places where they are obscured by shadows, as in the barrel vault (figs. 18 and 19), they become quite crude in their delineation and certain economies are practiced in the use of the more costly materials, such as the glasses in general and the metallic cubes in particular. While considerable glass is used, the colors and values are not carefully selected and a mixing of colors often occurs. In the cheaper materials the tesserae are not carefully selected for size and are cut in irregular shapes. Among the cheaper materials that are extensively used, in contrast to the earlier phases, are terracotta, yellow stone, a rather dark blue-gray rock, and a gray Proconnesian marble. It is these characteristics of technique and material, shared by all the parts, as well as the physical evidences of continuity of work, that lead to the conclusion that all the remaining work in the area should be assigned to one phase. It should be noted, however, that while the portrait itself belongs to this phase, it shares these characteristics to a lesser degree and was made perhaps by a superior craftsman with much more care than were the ornamental parts.

The ornamental mosaics of this phase will be described in the following order: *a.* the soffit of the large arch to the north (right in fig. 15) which contains the large alternating motifs of roundels and lozenges; *b.* the bull's-nose borders at each side; *c.* the mosaics in the barrel vault between the great arch to the north and the arches of the arcade to the south (figs. 18 and 19); *d.* the border at the base of the Alexander portrait (fig. 4); and *e.* the patch of repair that encroaches into the mosaic fragment of Phase 1 in the impost of the western arch of the arcade (fig. 12).

a. The Soffit of the Northern Arch (figures 15–17)

The soffit of the northern arch was cleaned to a height of about 3.50 m. in its western side. In this cleaned area are three units of the decoration—

alternate roundels (fig. 16) and lozenges (fig. 17). The width of the field of the soffit, including the double rows of dark red glass that define the edges of the soffit panel as well as the edges of a working limit, measures 1.12 m. at the level of the center of the lowest roundel.

The field of the soffit, in which the roundels, lozenges, and plant motifs are set, is of crudely cut, dull yellow stones of rather large size and of varying shapes and dimensions (from 1 to 2 cm.). They tend to be set rather far apart, as would be inevitable with such odd shapes and sizes, and are laid not in distinct rows but at random.

The lower roundel (fig. 16) is .94 m. in diameter, including the single row of red glass that defines it. Against the outside of this circle of red, but only at the lower left and right, are two stretches of gold tesserae, each in two rows, indicating that at first it may have been intended either to encircle the roundel with gold or, possibly, to provide a gold field for the soffit. In any case the stretch at the lower right, with three short areas of loss, surrounds between a fifth and a fourth of the circumference. There is nothing to indicate that this represents a difference of epoch; it seems to be simply a change of design. Gold does not appear in this context around any of the other motifs above. The outer zone, or border, of the roundel, about 10 cm. in width, is treated with a zigzag line of red glass, in one row, and with a small circular spot of about eight blue glass cubes at the center of each of the triangles. The tesserae in the "spots" are mostly light blue but among them are some of dark blue. The field of this outer zone is composed of oddly shaped chips of gray Proconnesian marble. Framed by this outer zone is a large circular motif (about .82 m. in diameter), outlined by a double row of red glass which contains an eight-sided figure with cusped edges, shaped like an umbrella. The field surrounding the eight-sided figure is of gold tesserae and within this, between the eight points of the "umbrella," are blue circles filled with light and dark blue tesserae of glass. All the outlines of the border and the diagonal lines that divide the "umbrella" into segments consist of single rows of red glass. The outer border of the "umbrella," between its red outlines, is composed of parallel rows of silver and some light transparent glass tesserae, and is from three to five rows wide. Each of the eight segments into which the main body of the "umbrella" is divided is laid in two halves. One half in each segment is of mixed blues; the other halves are alternately mixed greens and turquoise. All rows are laid in radiating lines. The center of the motif is a circle, outlined in red glass and filled with a single row of silver, then an inner row of gold, and finally with a few gray stones of crude shape at the very center.

The lozenge motif (fig. 17) above the lower roundel has a surrounding border which is similar to that of the roundel: inner and outer outlines of two rows of red glass, a zigzag in a single row of red glass and a field of gray Proconnesian marble. The "spots" in the triangles are of dark blue-gray stone, in contrast to the blue glass in the roundel. Attached at the center of each side is an incomplete circle which has a border like that of the lozenge: the outlines and the zigzag in lines of red glass and the field in gray marble. The fields of the two

upper incompleated circles are filled with mixed green tesserae and the two lower ones with mixed blue glasses. The field within the outer border of the lozenge is surrounded by a single row of gray marble and is filled with horizontal rows of gold. Set into the field, at the corners of the lozenge, are four heart-shaped leaves; these are outlined by single rows of dark blue-gray stone and filled with mixed green and blue glasses. In the center of the lozenge is a large rectangle, vertically disposed, which is bordered by two rows of red glass within which is a single row of gray marble. The field of the rectangle is largely of silver tesserae but it contains also some gold tesserae set on one side as light transparent glasses. Set into the field is a quatrefoil which is outlined by a single row of large, dark blue-gray stones and by one, two, or three rows of green glasses. The field within is filled, except at the very center, with dark blue-gray stones. Marking the center of the quatrefoil are concentric circles of blue-gray stone, Proconnesian marble, and at the very center a small circle of silver. Around the quatrefoil, at the four corners of the rectangle are pointed, blade-like leaves outlined in dark blue-gray stone and filled with mixed green glasses (light turquoise and yellow-greens).

The third motif that was cleaned, above the lozenge, is again a roundel which is essentially like the lower one with the principal exception that its border consists of a fret rather than a zigzag.

Along the edges of the soffit panel, (fig. 15) acting as space fillers between the large motifs, are plant forms with leaves (heart-shaped) on thin stems. These are executed in green and blue glasses and dark blue-gray stone.

In the sequence of the work areas in this third phase of decoration, the soffit of the large arch containing the motifs just described, was executed before the bull's-nose borders along the two edges of the arch. Although the evidence indicates that the bull's-nose border was laid after the mosaics that abut it in the triangular area on the southern face of the arch (see fig. 15) which extends upward into the barrel vault, we will nevertheless describe the borders of the great arch before taking up the mosaics of the barrel vault.

b. The Bull's-nose Borders at the Edges of the Northern Arch (figures 4, 11, 15)

The southern border (at the left) of the northern arch is about .33 m. wide. In character and materials it especially resembles the lozenge border across the base of the Alexander panel (cf. section *d*, *infra*) and to a lesser degree the mosaics of the barrel vault (section *c*, *infra*), but differs from them in design. As in them, terracotta, dark blue-black glass, various local blue-gray stones, and metallic tesserae are used extensively. It should be noted, however, that these materials, with the exception of terracotta, also appear in the soffit ornaments (section *a*, *supra*), but are less conspicuous.

The motifs in the border at the southern (left) edge of the arch consist of connecting lozenges that have a field of terracotta into which are set four smaller lozenges of mixed gold and silver. The terracotta field is visible in two rows around the edge and in the cross lines, also of two rows, that separate

the smaller metallic lozenges. The triangles that are formed along the edges of the border have a field of mixed dark blue-gray rock and blue-black glass. Within each triangle is a semicircle outlined in silver and a few reversed gold tesserae and filled with tesserae of terracotta.

The bull's-nose border along the north edge of the large arch is fragmentary and had been painted over by the Fossatis in imitation of the border pattern of Phase 1 (fig. 15). Its cleaning revealed that the border has a background of dark blue-gray stone tesserae with a series of lozenges of mixed greens and a circle of gray marble at the center surrounded by two rows of silver. The lozenges are framed by two rows of gold with a small protrusion of gold at the center of each side and are outlined by a single row of dull yellow stone tesserae. In the triangular spaces at each side of the border, between the lozenges, are trefoils pointing inward. These are of gray marble outlined by a double row of silver.

c. The Mosaic Patterns of the Barrel Vault (figures 18, 19)

On its southern side, the barrel vault dies into the wall that is carried by the lateral arcade at a level of about 1.25 m. above the crowns of the arches of the arcade (see the cross-section drawing, text fig. B). The wall below this level is more or less vertical but the mosaic pattern of the vault continues upon it down to the surrounds of the arches of the arcade; the vault is, therefore, highly stilted. It should be noted that, although the pattern used throughout the vault continues on the vertical wall at the south, without any break in the design, important changes do occur in the materials used in the mosaics of the wall, below the spring of the vault, and that the horizontal line at which the changes occur seems to mark not a difference in epochs but the work limits between two operations in the execution of the mosaic. The changes apparently were undertaken to give the lower parts of this mosaic greater brilliance than those above, which are heavily shadowed by the vaults and are dull and lacking in strong contrasts. This was done by substituting glass tesserae in the important elements of the design, especially gold and silver, for the dull stones used above. Only in this area of the vault is the illumination sufficient to make the use of these reflective materials, which are more costly, at all justifiable. On the northern side of the vault the large arches rise, at their summits, to the level of the spring of the vault, but the mosaics continue onto the surfaces of the vertical spandrels without a change of pattern and in the cheaper materials, except for some black glasses scattered in the background.

Figure 19 represents a detailed area of the pattern in the mosaics immediately above the crown of the western arch of the arcade and is thus in the enriched area below the spring of the vault. It includes a part of the motif that acts as a surround above the bull's-nose border of the soffit mosaics of Phase 2. Figure 18, which overlaps the upper parts of figure 19, represents a typical area of the mosaic at the level of the spring of the barrel vault, including a specimen of both kinds of work, and illustrates the differences in their appearance.

The over-all pattern employed for the mosaics of the barrel vault is composed of alternating diagonal rows of circles (about 25 cm. in diameter) and of lozenges (about the same height). The alternating diagonal rows are so adjusted that the pattern also forms horizontal rows of alternating circles and lozenges.

Excluding the lower parts of the mosaics on the south side of the vault, the pattern is placed in a background of dull, dark, blue-gray rock laid in roughly horizontal rows. The stones are rather large, irregularly cut, and spaced rather far apart. The circles are outlined in single rows of terracotta and the field within is laid with horizontal wavy lines of yellow stone. In this field there are usually three wavy lines, more or less equally spaced, of terracotta tesserae. The lozenges are of white marble tesserae laid in parallel diagonal rows. Two lines of terracotta through the centers of the lozenge make a diagonal cross; these are extended, on the diagonals, into the background with a fleur-de-lis of white marble tesserae at each side of the lozenges. The extended fleurs-de-lis almost touch one another to form a general grid pattern over all the surfaces of the vault.

The mosaics on the south side, below the spring line of the vault, contain three uninterrupted horizontal rows of the same motifs. Here, however, the background is made more brilliant and luminous by mixing, in about equal proportions, reflective glass tesserae of blue-black with those of the blue-gray rock that alone is used above in the background. While the circles are outlined and decorated with three wavy lines of terracotta, like those above, the background of the circles, instead of being in yellow stone, is made of horizontal wavy lines of gold and silver tesserae (highly reflective) that are tilted at an angle to face downward. Mixed gold and silver tesserae are used also in the fields of the lozenges and in the fleurs-de-lis, but are now laid flush with the surface. The crosses that bisect the lozenges are of terracotta.

Because the thickness of the arches of the arcade was considerably less than the width of the respond on the face of the pier below (see fig. 11, to left of portrait), an awkward condition was created in the form of the tympanum in which the portrait of Alexander was placed. The projection of the respond was simply carried upward, more or less out of sight and as an integral part of the pier, behind the wall of the arcade to the level of the spring of the barrel vault where it was terminated. The patterns are those used in the mosaics of the barrel vault, but in the richer materials that occur on the wall below the spring line of the vault. On the northern face of this projection the mosaic pattern is brought down to a level slightly below the top of the return of the plaster string-course that runs below the Alexander panel. At its lower end this mosaic of the northern face of the projection is an integral part of the mosaic that was carried around onto the face of the respond, though here totally different in design, to form a patch in the lower right corner of the impost fragment of Phase 1, where the original mosaic had evidently been destroyed (see section *e*, *infra*, and fig. 12). On the eastern face of the projection the mosaic pattern of the vault comes down to the upper right portion of the fragment of Phase 1 and terminates there with seven horizontal rows of gold and silver tesserae that are set at an angle to face downward.

Also from Phase 3 are the borders that form the surrounds of the arches of the arcade below the southern side of the barrel vault (fig. 19). These borders are composed of a running wave motif and measure about 20 cm. in width. The wave design is made of white marble tesserae in a field of metallic tesserae that were set in reverse, or on the side, with a sprinkling of dark glass tesserae of various colors. Above the wave motif is an edging of two rows of white marble; the lower edge of the surround is in two rows of terracotta cubes. Below the latter, where it abuts the outer edge of the bull's-nose border that frames the soffit mosaics (Phase 2) of the arcade, there is a pronounced joint, indicating, in this case, a distinct difference in epoch.

d. The Border at the Base of the Alexander Portrait (figures 4, 11, 12)

The border at the base of the portrait is .52 m. wide from the top of the moulded plaster string-course to the bottom of the green zone in which the figure stands. It is composed of three adjoining lozenges set in a field of mixed, dark blue glasses that are laid in rows that tend to incline in a diagonal direction. The lozenges are drawn by single rows of large terracotta tesserae. Although the motifs within the lozenges have suffered losses, one can see that in each there was a roughly drawn circle outlined by a single row of terracotta tesserae. Within, a small circle is connected to the larger circle by four short lines, vertical and horizontal, that form a cross. These lines, too, are of terracotta. The field of the lozenge, outside the large circle, was laid in widely spaced horizontal rows of tilted gold tesserae with some admixture of silver. The field within the larger circle is laid in the same fashion but with silver, rather than gold, predominating. In each of the triangles formed by the lozenges along both sides of the border there is a terracotta trefoil bordered by two rows of silver tesserae.

The very close similarity between this border and the bull's-nose border of the arch which it abuts at the right—their general character and some details of their design, as well as their use of almost identical materials—was mentioned above and is quite obvious even in a photograph. At its right end, moreover, where it adjoins the lower end of the bull's-nose border, there is absolutely no break such as would indicate a difference in epoch, nor is there any apparent joint between the two, although they may possibly have been executed in separate operations within the same campaign. This is an important point because the border below the portrait is an integral part of the portrait panel itself; again there is no joint of any kind between the border and the bottom edge of the green zone in which the figure stands. There is, in the bottom edge of the green zone, nearly halfway across the panel, a small patch about 23 cm. long and three rows high which is rather neatly filled with green tesserae and must represent a small repair that was carried out during the course of the work. It is this evidence of continuity of execution as well as the manner in which the vertical edges of the portrait are joined to the mosaics of the barrel vault that make it certain that the panel itself is part of the decoration of Phase 3.

e. The Patch of Repair in the Area of Phase 1 (figure 12)

When the mosaics of Phase 3 were made, the mosaicists must have found that the lower right-hand area of the fragment of Phase 1 had been destroyed, for it is obvious that they carried their work, without a break, around the edge of the projection of the pier respond to fill the area of loss (figs. 4 and 12). They made no attempt to complete the designs of the Phase 1 mosaic or to use colors or materials that were at all similar to those of the earliest work. Ignoring the original borders they simply repeated what was the most conspicuous motif in the design of the earlier work (which they had not employed in their own work), namely, a rinceau scroll. In that position, of course, it was entirely out of place. The materials they used were among those which they had just been using in the mosaics of the barrel vault: dark blue-gray rock, terracotta, and the metallic tesserae.

This irregularly shaped patch measures about 60 by 60 cm., not counting the continuation of the work upon the northern face of the pier respond which is an integral part of the mosaicists' work farther up on the respond. The background for their scroll is of blue-gray rock. The scroll itself is of gold and silver tesserae and has buds and flowers of large tesserae of terracotta.

THE DATES OF THE ORNAMENTAL MOSAICS

The ornamental mosaics of Phase 3 present no dating problem for they were made in conjunction with the portrait of the Emperor Alexander in the early years of the tenth century, most probably on his accession to the throne in A.D. 912 (see *supra*). The dates of the mosaics of Phases 1 and 2, however, can only be conjectured. The following discussion is offered, therefore, as a suggested explanation of certain features that have been observed in the mosaics and their relation to other phenomena that are to be found in the structure of the building and to known facts regarding its history. It will be seen that our interpretation leads us to suggest that a drastic and extensive reconstruction occurred in the building which might account for the various phenomena to be discussed. Future studies of the architectural history of Hagia Sophia may prove or disprove our hypothesis, but in any case the testimony offered by the mosaics of Phases 1 and 2 will prove significant and should be taken into account.

Before introducing additional considerations that are relevant to the problem of dating, it is necessary to summarize the pertinent observations that have been made above in describing the mosaics. The Phase 1 fragment, it should be emphasized, is only one of four remnants of the same phase that are still *in situ* in corresponding positions on the four piers. All four fragments are broken off at the spring lines of the terminal arches of the two lateral arcades of the galleries, thus indicating that elsewhere in the fourteen arches of the two arcades the mosaics of the earlier of the two phases had been destroyed. In the four corresponding fragments the central rinceau panels are outlined by single

rows of white stone and their borders are alike in design, materials, and color. All four differ from the decoration of Phase 2 in the same respects. In precisely the same respects the mosaic soffits of the arcades of the four exedrae, wherever they are preserved, differ from those of Phase 2 and must likewise be regarded as belonging to Phase 1. An accounting must, therefore, be made for the fact that the Phase 1 mosaics were destroyed in all arches of the lateral arcades but not in those of the exedrae.

In our fragment of Phase 1 the border on the nave side (left) of the pier is broken away from the marble revetment with which it originally had contact, which suggests that the marble slab on the southern face of the pier, on which the *opus sectile* spandrel rests, had been removed and replaced; along its lower edge the mosaic setting bed, however, has contact with the marble on the eastern face of the pier (fig. 12). The fragment is also broken around the tie rod with which it now has no contact—a possible indication that the rod either did not exist at the time the mosaic was laid, or, that it was removed and replaced later, perhaps in conjunction with the destruction of the original soffit mosaic of the arch.

The soffit mosaic of Phase 2 is repeated in the same technique, style, and materials, but with the usual variations in types of foliage, in all fourteen arches of the two lateral arcades (fig. 22) of the gallery as replacements for those of Phase 1. So far as we have been able to find, these mosaics are not matched in any other soffits of arches in the building. While the mosaic in the arch here described replaced earlier ones of Phase 1, it nevertheless has contact with the *opus sectile* spandrels (figs. 13 and 14) with which the faces of the arches, on the nave side, were decorated. However, the *opus sectile* spandrels, although damaged, appear to be original and are exactly like those which are in contact with the mosaic decorations of Phase 1 in the arches of the four exedrae. In technique and vocabulary of forms the spandrels are matched by some of the decorations on the wall of the apse and by various *opus sectile* panels on the west walls of the nave and side aisles.³⁸ Moreover, the spandrel on the face of the arch here described does not fit the trace of the arch itself (fig. 14). The mosaic setting bed of Phase 2 also has contact with the upper side of the metal tie rod, while the fragment of Phase 1 does not. These facts suggest the possibility that the spandrel decorations in *opus sectile* on the faces of the arches of the lateral arcades were removed and replaced in conjunction with the laying of the mosaics of Phase 2, and that the tie rod was put in place at the same time. We do not insist upon the removal and replacement of the spandrel decorations on this evidence alone, for the mosaics of Phase 2 could equally well have contact with the slate backings of the spandrels without predicating their removal.

Mosaics in soffits of relatively small arches, such as these, are unusually well protected from conditions that are destructive to other mosaics, namely, seepage of water and the shattering that is apt to occur in masonry of larger spans, or, from the structural deformations which result from a variety of

³⁸ See "Notes on the Work of the Byzantine Institute: 1957-1959," *op. cit.*, pp. 206-208.

causes: settlement of foundations, earth movements, severe seismic disturbances, or inadequately countered thrusts. Moreover, in small spans the plaster and its mosaic surface, if homogeneity in the plaster is reasonably well retained, would be unlikely to fall even if adherence of the plaster to the structural soffit of the arch were imperfect; the arched form of the plaster would still tend to make the mosaic self-sustaining. With very few exceptions, the surviving mosaics in the galleries are found in the soffits of arches. If mosaics of the earliest phase of decoration in the galleries were to survive at all, it seems likely that they would be found in arch soffits. It is therefore significant that the mosaic decoration of Phase 1 in all fourteen arches of the lateral arcades is consistently missing, whereas the decorations of the same phase are extant in the arches of the exedrae.

These facts, in themselves, suggest the possibility that the destruction of the mosaics of Phase 1 in the arches of the lateral arcades resulted from the destruction and subsequent reconstruction of the arches themselves. Such a reconstruction could hardly have been done without dismantling everything that was supported by the arches, that is, the two lengths of the upper cornice from pier to pier and the curtain walls that screened the vast spans of the two concealed arches, visible only on the exterior, which carry the northern and southern segments of the great dome (fig. 22). As a result of such a demolition the columns of the lateral arcades of the galleries, between the piers, would also have been taken down.

As further indications that such a major reconstruction may have occurred, there are three additional pieces of evidence to be considered. One is that the columns of the two lateral arcades, including their bases, have been shifted from their original positions on the stylobates which rest upon the lower cornice of the nave. The westernmost column of the north arcade which, with the pier, supports the arch described above, has been moved at its base as much as 20 cm. to the north from its original position; all the columns of the north arcade have been shifted northward, some an even greater distance, and those of the southern arcade were moved southward. The evidence for this is clearly visible in the incised setting marks, carved into the upper face of the stylobate at each side of each of the column bases, which were to indicate to the original builders the centers, both laterally and longitudinally, of the column bases, and thus the exact positions where the columns were to rise. The degree to which the columns were moved can thus be exactly determined by comparing the original setting marks with the centers of the bases in their present positions.³⁹ The reason for the shifting of the columns, and, therefore, at least one factor in support of our hypothesis that the arches, cornices, and tympana may have been rebuilt, was that, owing to deformations in the building, the columns had leaned outward, along with the great piers, and were in need of readjustment to

³⁹ All these indications will be recorded in the measured drawings and in the text of the forthcoming publication on the architecture of Hagia Sophia by Mr. Robert Van Nice. The following interpretation of the nature and extent of the reconstruction of 558–562 is not necessarily one with which Mr. Van Nice will be able to agree as a result of his studies.

vertical positions (see *infra*). It would have been a colossal engineering feat to have moved all the columns without removing the vast amount of masonry and the great loads which they supported. Some of the columns of the semi-circular arcades of the four exedrae, at gallery level, apparently also needed to be restored to vertical positions, but this was not done until the mid-nineteenth century when the Fossati brothers straightened twelve of them by moving the bottoms of the columns without seriously disturbing the relatively smaller arcades and the small semidomes which they supported—a feat of which the Fossatis were justly proud. The columns of the far greater arcades with which we are here concerned were not moved by the Fossatis; in their accounts of the restorations they do not claim to have moved these columns, as they would surely have done had they undertaken such a huge and dangerous task.⁴⁰ Of those columns that the Fossatis straightened, the original bases were apparently destroyed and replaced by new ones, for the extant bases have far greater accuracy of form than those of the sixth century and their plinths and moulded parts are separate members. On the other hand, the bases of the columns of the lateral arcades have all the characteristics of sixth-century work; the forms are irregular and the plinths and mouldings are cut from one block. They are quite possibly the original bases which were moved without suffering any appreciable damage.

A second point of evidence is that, whereas the lower cornice (fig. 22) and the stylobate of the arcade that rests upon it are no longer in straight alignment, the upper cornice, on the other hand, is relatively straight. That is to say, the lower cornice, on each side of the nave, curves outward into the nave to form a pronounced horizontal entasis, a phenomenon that is also attributable to structural deformations that resulted when the piers were forced to lean outward. Since the upper cornice is more nearly in alignment, despite the fact that originally it too must have been deformed by the same forces, we are led to suggest that it had been removed and was subsequently replaced.

The third point in support of these conclusions concerns the tympanum walls above (fig. 22). The interior faces of these walls slope outward as they ascend. The inner face of the north tympanum inclines outward to a distance of somewhat more than half a meter in a rise of about fourteen meters, where it reaches the soffit and becomes flush with the inner face of the concealed arch. A similar condition exists in the southern tympanum. The exterior faces of the tympana, however, are much more nearly vertical. The walls are, therefore, considerably thicker at their bases than they are at their upper limits. These facts indicate that the walls have been altered, and possibly rebuilt, for in the original structure one would expect them to have been more nearly vertical and of uniform thickness throughout.

The great deformations which are to be observed in many parts of Hagia Sophia, and which produced the conditions in the arcades that led to the

⁴⁰ We are indebted to Mr. Cyril Mango for information regarding the work executed by the Fossatis. He has carefully studied the notes, drawings, correspondence, and writings relating to their work at Hagia Sophia.

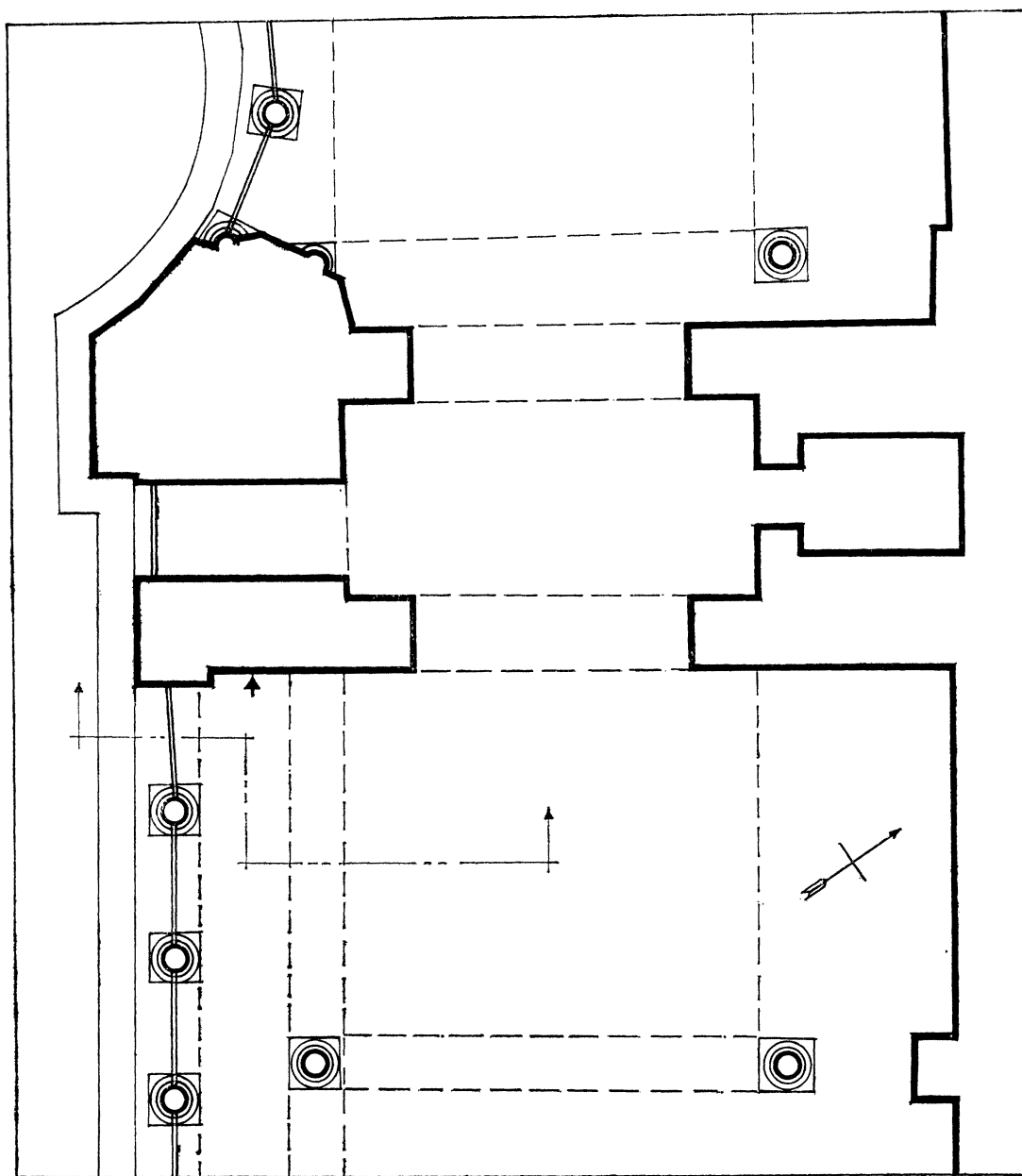
straightening of the columns, were mainly caused by the fact that the four great piers had tipped outward along lines that roughly correspond to the diagonal thrusts of the great dome; that is, to take only one as an example, the northwest pier leaned in a direction that is roughly toward the northwest, but to a somewhat greater degree toward the north. At the level of the second cornice, which marks the spring line of the great arches, the piers are now much further apart than they are at the floor level of the nave (and of course further apart than they were when the arches were first built), and the distances between the tops of the opposing arches are greater still. One can readily see, therefore, what effects would be produced in the arches, the dome which they carry, and the verticality of the lateral arcades and tympana. The arches not only leaned outward but, as their haunches were forced apart, they must have broken at their crowns. The side walls and arcades were carried along with the piers and the great arches, and they, too, leaned outward and were possibly shattered.

These are some of the distortions that account for the major disaster that befell the great church soon after it was first erected. After serious difficulties, and perhaps some reconstruction even in the course of original construction, Hagia Sophia was dedicated on December 26, 537. On May 7, 558 a great collapse occurred which involved at least the eastern portions of the dome and the eastern arch and semidome. The reconstruction of the church, by Isidorus the Younger, was completed in the thirty-sixth year of Justinian's reign and it was reconsecrated on December 24, 562. Other periods of repair and consolidation during the course of the centuries are recorded, and doubtless there are still others not mentioned in the sources, but only the reconstruction of 558–562 could have been so extensive or have involved such a major readjustment to the deformed structure as to account for the removal of the tympana and the arcades which is implied by the evidence offered by the mosaics of Phases 1 and 2. Accordingly, the impost fragments and the existing mosaics in the soffits of the arches of the four exedrae are here dated shortly before 537 (Phase 1) and those in the lateral arcades shortly before 562 (Phase 2).

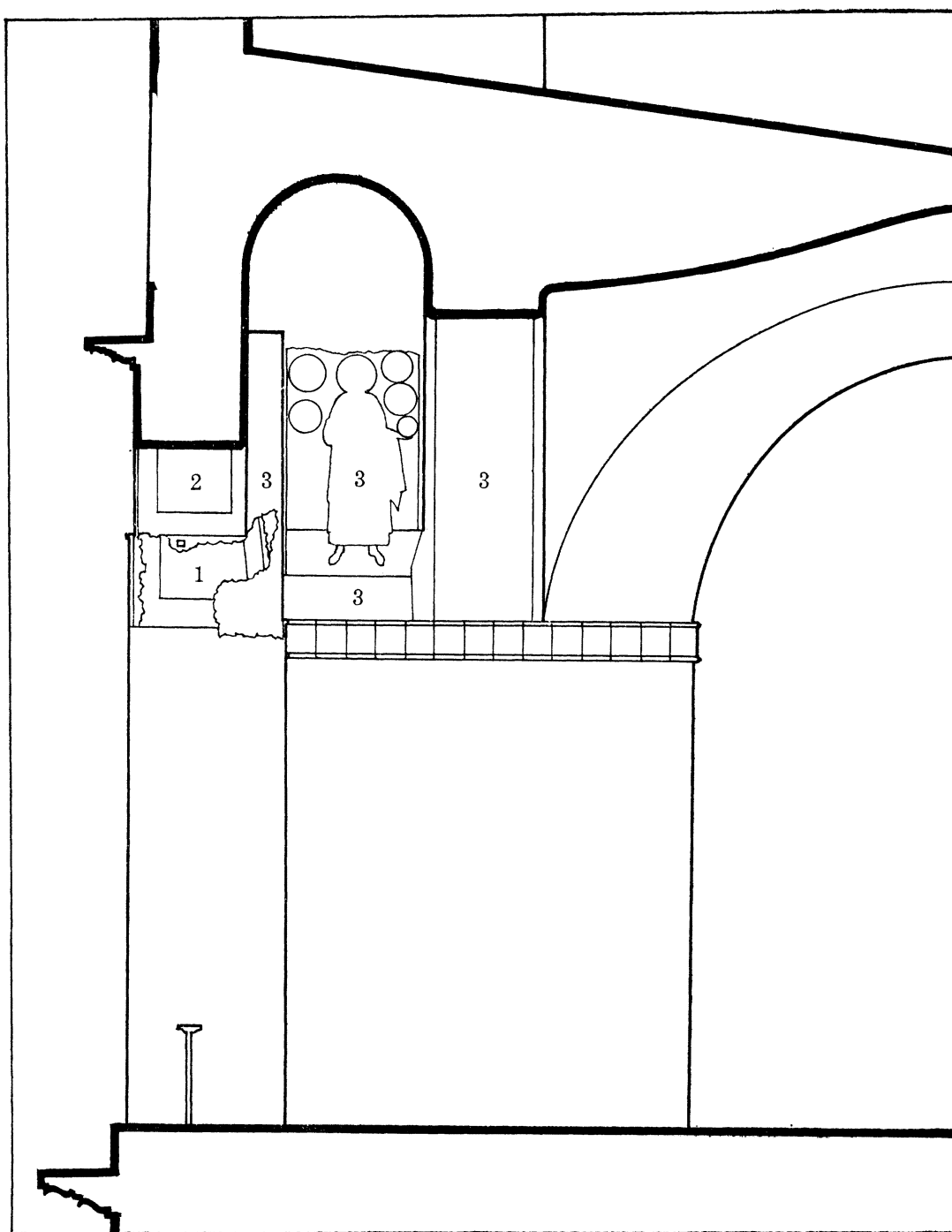
Such a rebuilding of the arcades and tympana could not, in any case, have been later than the mosaic decorations of the tympana, which are still partly preserved, and which formed part of the program of repairs and redecoration which was begun, after Iconoclasm, by Michael III and Basil I, about 866, and which continued after the destructive earthquake of January 9, 869. The repairs to the structure following upon that earthquake seem not to have involved extensive rebuilding, for they are said to have been necessitated because of injuries sustained in many places and because the building was "threatened" by the effects of time. We can, therefore, also disregard the period of repair that followed the earthquake of October 989, after which a serious reconstruction did take place involving the rebuilding of the great western arch and the western part of the dome,⁴¹ if for no other reason than the existence

⁴¹ For further discussion of these repairs, and for bibliographical references, see the work of C. Mango cited *supra*, note 4.

of some of the mosaics in the tympana which surely date to the end of the ninth century or, at the latest, to the earliest years of the tenth. We have seen, however, that redecoration in the galleries continued, or had to be done again, in the early tenth century in the areas of Phase 3 that have been described above.



A. Plan. Hagia Sophia, Location of Alexander Panel on Northwest Pier at Gallery Level



B. Section. Hagia Sophia, Location of Alexander Panel and Three Phases of Mosaic



1. Hagia Sophia. Mosaic Portrait of the Emperor Alexander. Detail



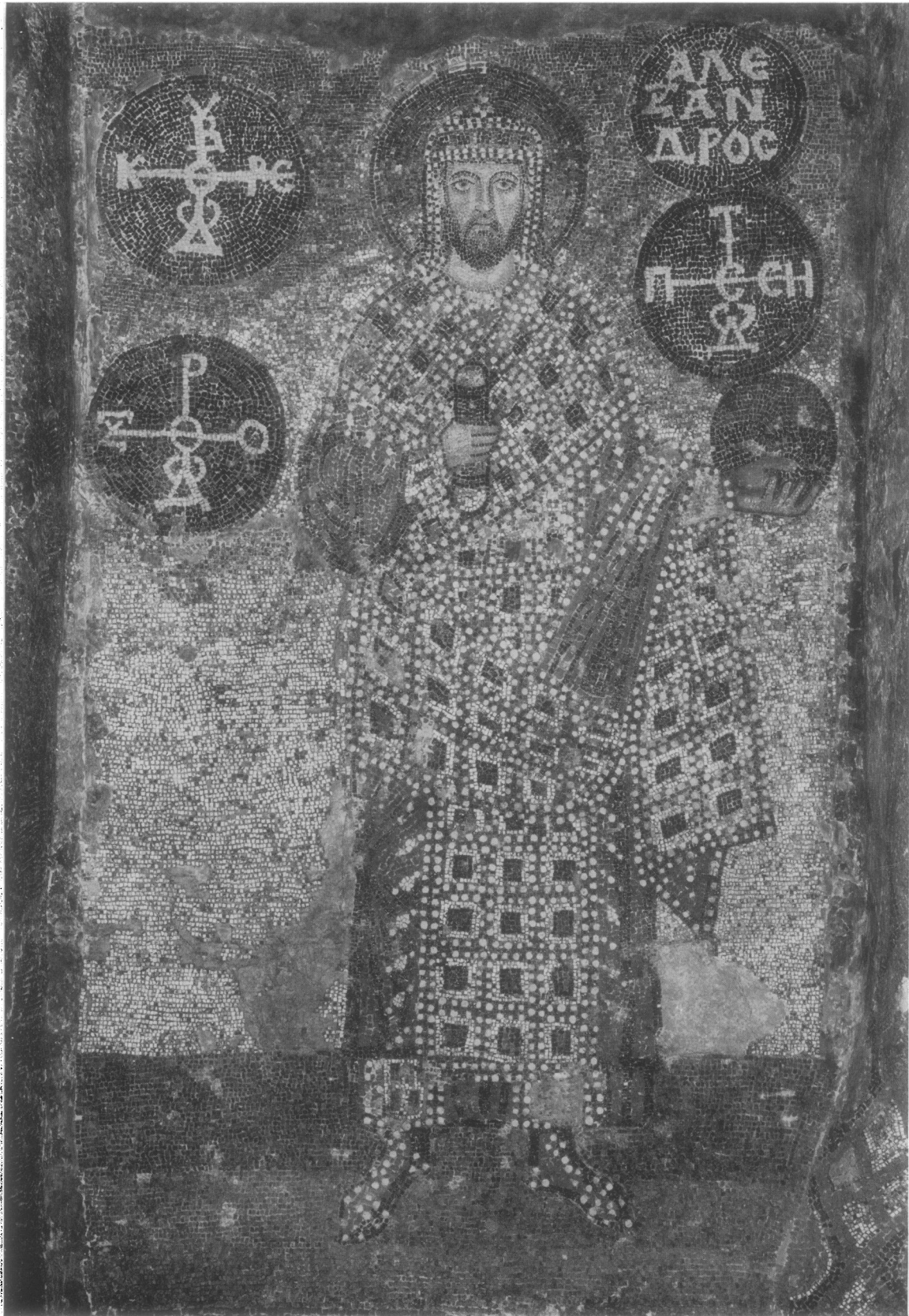
2. Alexander Panel and Surrounding
Areas of Mosaic. Before cleaning



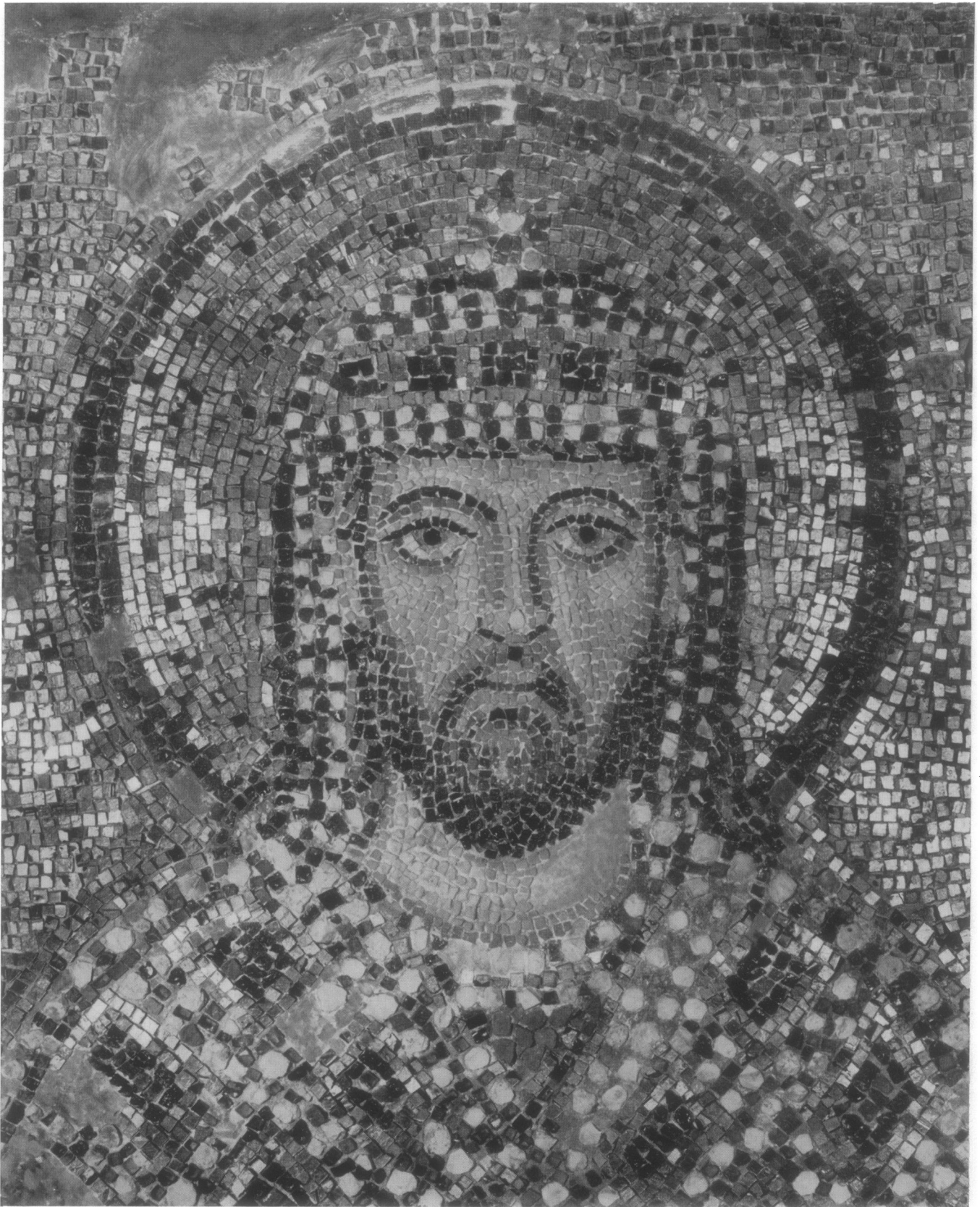
3. Alexander Panel. Before cleaning



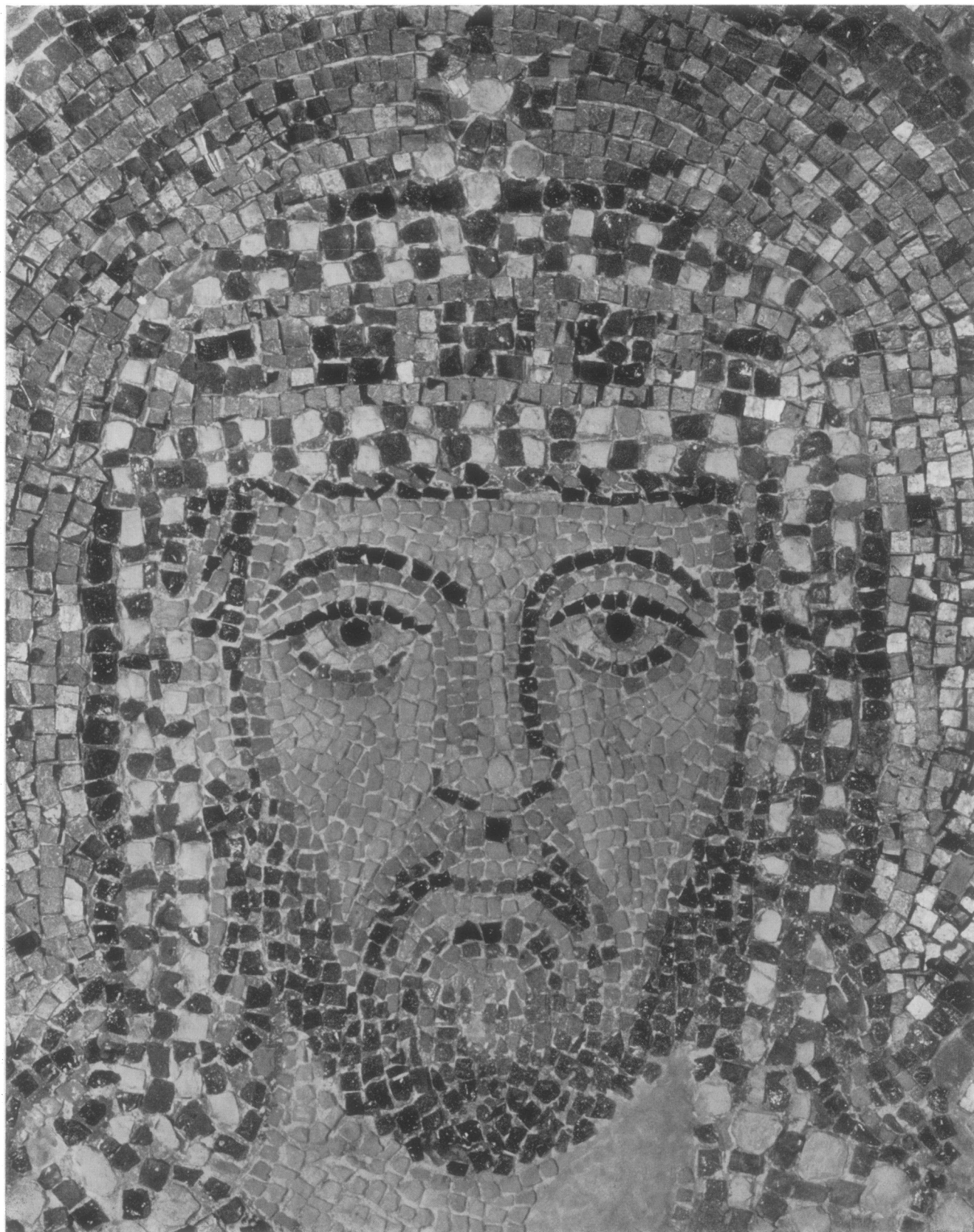
4. Alexander Panel and Surrounding Areas. After cleaning



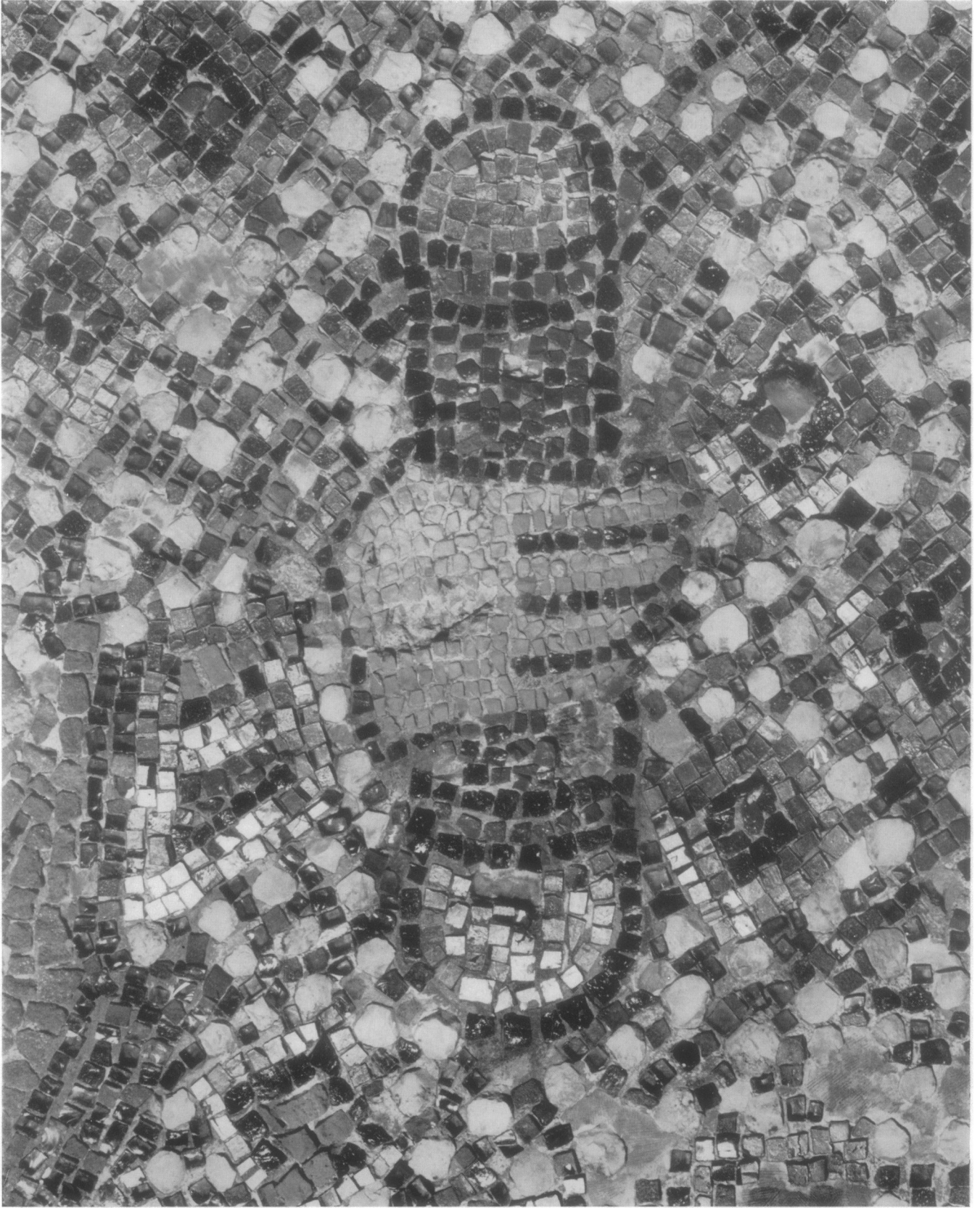
5. Alexander Panel



6. Alexander Panel. Detail, Bust



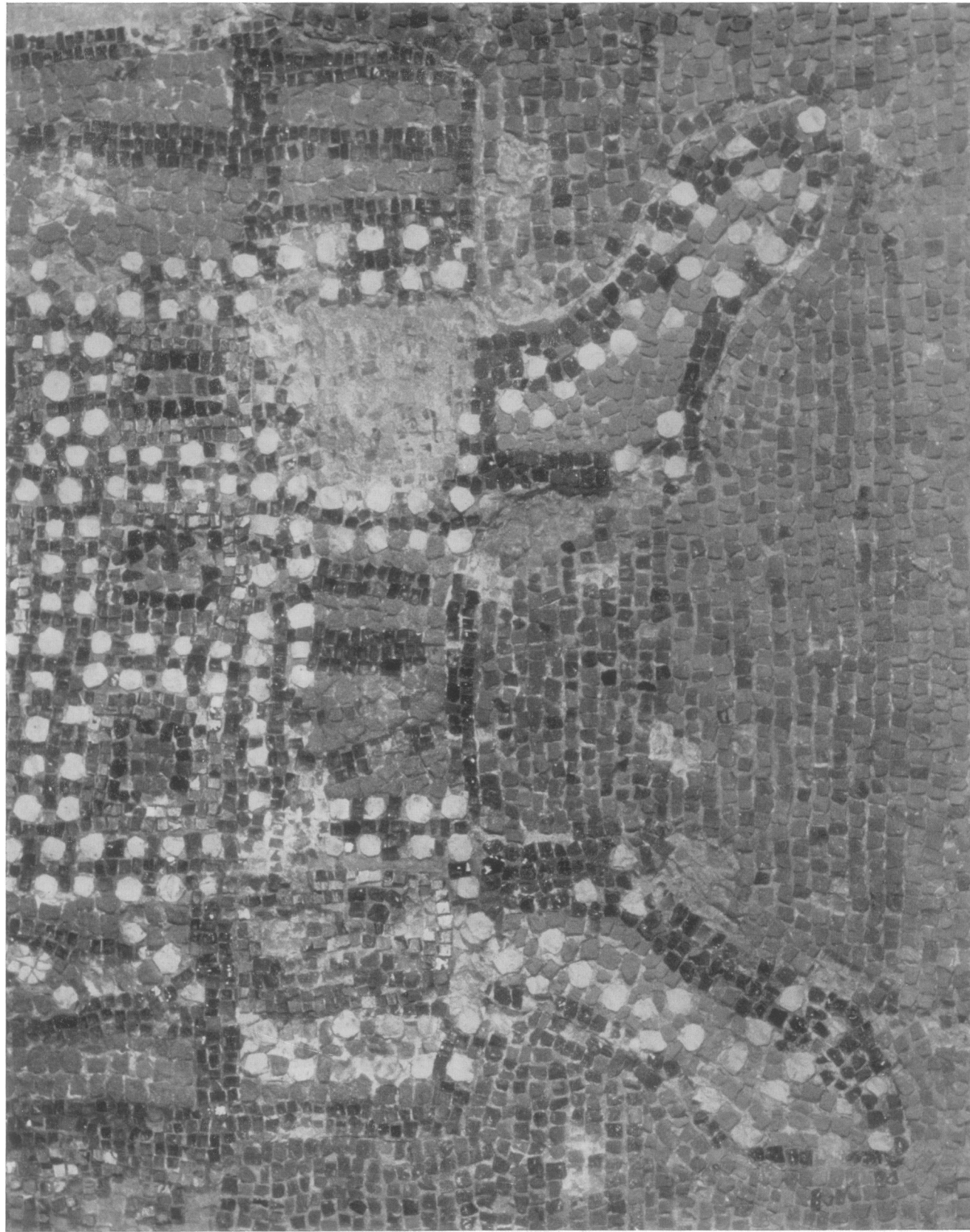
7. Alexander Panel. Detail, Head



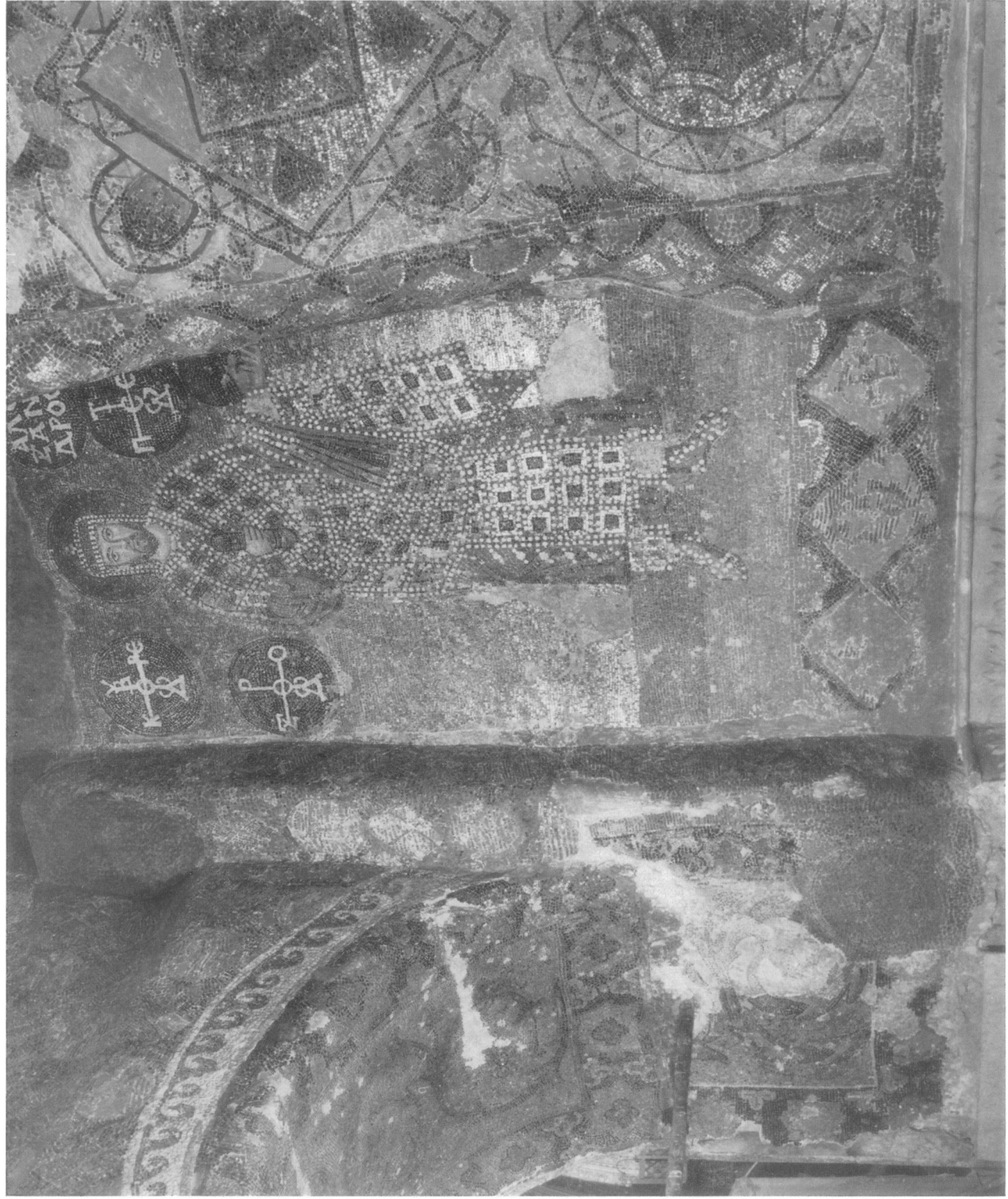
8. Alexander Panel. Detail, Right Hand and *Akakia*



9. Alexander Panel. Detail, Left Hand and Orb



10. Alexander Panel. Detail, Feet



11. General View of Alexander Panel and Surrounding Mosaics



12. Mosaic Fragment of Phase 1 at Impost of Arcade



13. Mosaic of Phase 2 in Soffit of Arcade, looking west



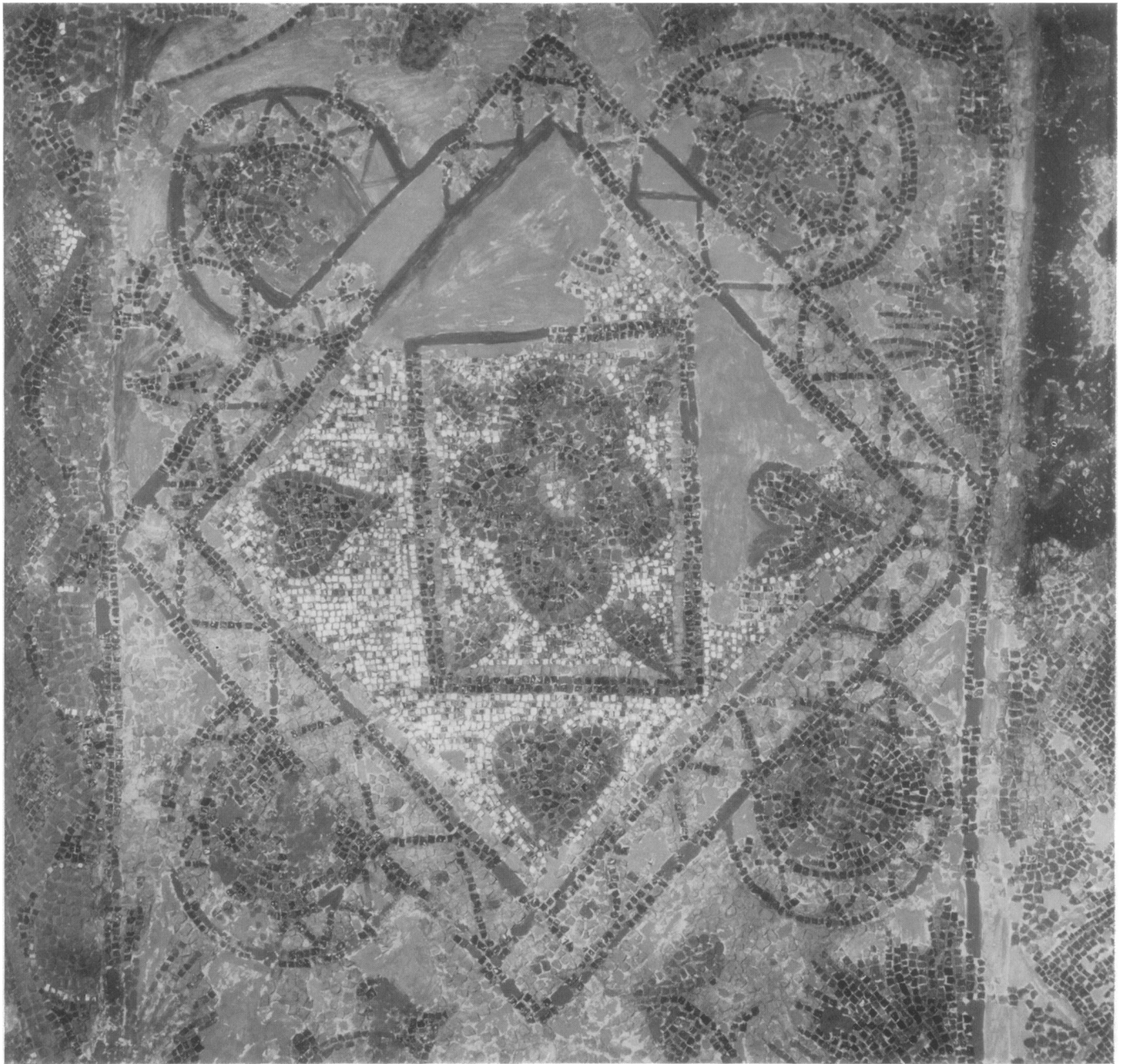
14. Mosaic of Phase 2 in Soffit of Arcade, looking southeast



15. Mosaic of Phase 3 in Soffit of North Arch, looking west



16. Soffit of North Arch. Detail, Lower Roundel



17. Soffit of North Arch. Detail, Lozenge



18. Mosaic of Phase 3 in Barrel Vault, South Side, Upper and Lower Zones

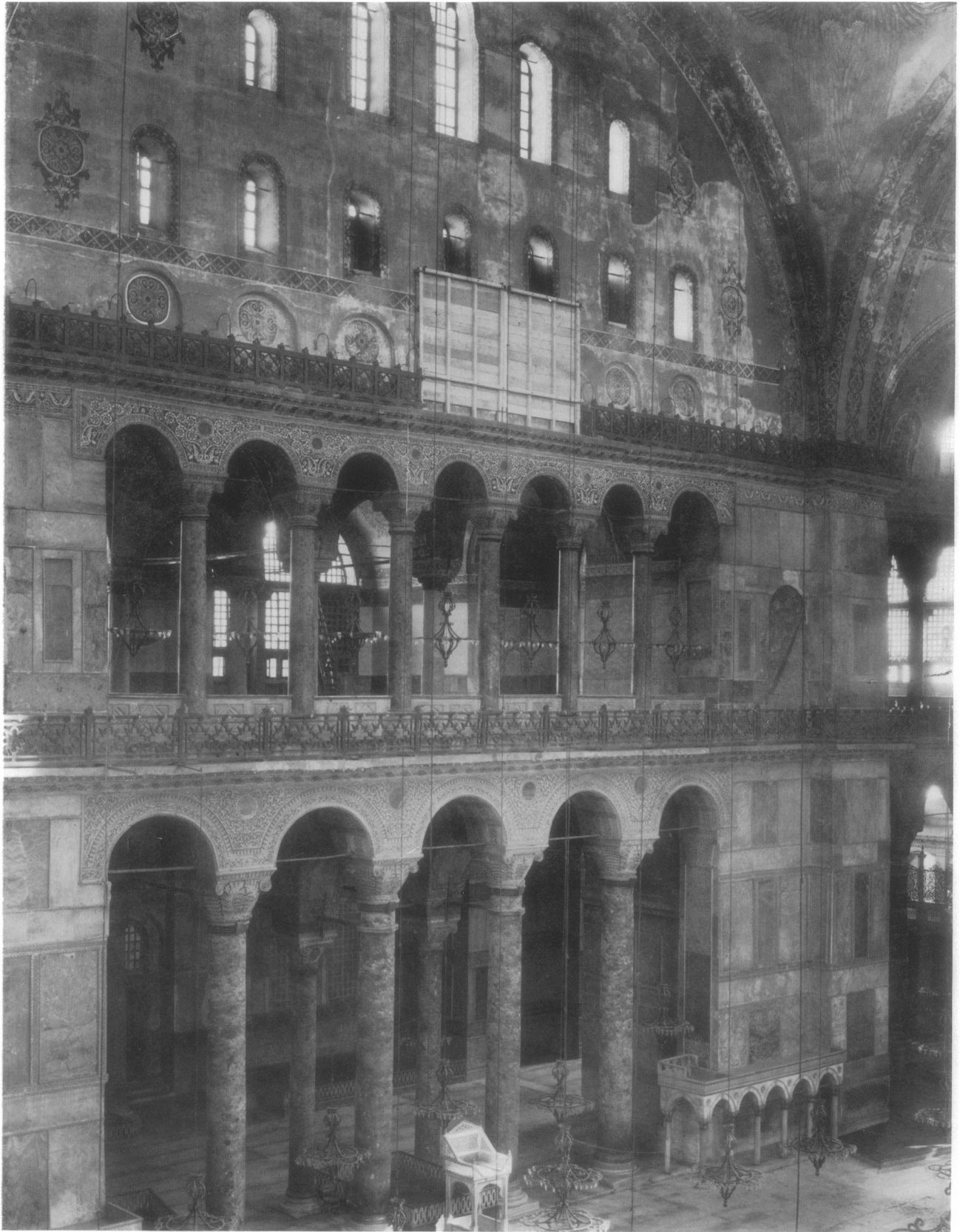


19. Mosaic of Phase 3 in Barrel Vault, South Side, Lower Zone





21. Fossati Water Color of Mosaic Portrait of the Emperor Alexander



22. Hagia Sophia. General View of Northern Arcades and Tympanum (1939)